

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 758. (No. 27, Vol. XV.)

JULY 5, 1923

[Weekly, Price 6d.
Post free, 7d.]

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2

Telegrams: Truditor, Westcent, London. Telephone: Gerrard 1828

Annual Subscription Rates, Post Free:

United Kingdom .. 30s. 4d. Abroad .. 33s. 0d.*

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates

* European subscriptions must be remitted in British currency

CONTENTS

| | PAGE |
|---|------|
| Editorial Comment | |
| The R.A.F. Pageant | 357 |
| The Expansion of the Air Force | 358 |
| The R.A.F. Aerial Pageant | 359 |
| London Terminal Aerodrome | 367 |
| The International Air Congress | 368 |
| Apparatus and Equipment at the National Physical Laboratory. | |
| By R. V. Southwell | 370 |
| Annual Inspection of the National Physical Laboratory | 371 |
| Personals | 371 |
| Derby En Fele for Mr. F. H. Royce | 372 |
| Thirty-Eight Hours' Flying in Six Days | 374 |
| Royal Air Force | 375 |
| R.A.F. Appointments | 375 |
| R.A.F. Half-Yearly List of Promotions | 375 |
| R.A.F. Memorial Fund | 375 |
| Air Navigation Regulations (Amendments) | 376 |
| In Parliament | 376 |

EDITORIAL COMMENT.



NCE more the Royal Air Force Pageant has demonstrated to tens of thousands of people the high qualities of British pilots, and once more, according to tradition, the proceedings were carried out absolutely to time schedule and without a hitch. As in previous years, the organisation was perfect, and reflected the greatest credit on those responsible for this great event. In writing about the R.A.F. Pageant last year, we commented on the lamentable fact that such splendid pilots as the Pageant demonstrated us to have should be handicapped by having to fly, in most cases, obsolete or obsolescent machines. Saturday's great "Show" proved that we now have machines of the latest type, splendid examples of the aircraft designer's art, but it is to be feared that many of those who watched with admiration the wonderful performances at Hendon were not aware that, with the exception of Longton's masterly

demonstration of "aerobatics" (we are not now referring to his "crazy flying") on the Fairey "Flycatcher," all the spectacular events were carried out on old types of machines, the most "finished" of them all being, perhaps, the formation stunts by R.A.E. experimental pilots on the old S.E. 5.

Taking part in the "fly-past" were many new types, such as the Avro "Cub-Aldershot," the Fairey "Flycatcher," the Fairey "Fawn," the Parnall "Plover," the Blackburn "Dart" and "Fleet Spotter," the Avro "Bison," the Supermarine "Seagull," the Gloucester "Grebe," the E.E.C. "Wren," and the not very new Westland "Weasel" and "Walrus," and the Handley Page "Hanley." The Armstrong-Whitworth "Siskin" was present, but did not take part. Looking at all these machines, it was somewhat disquieting to reflect that none of these types are yet distributed to the various R.A.F. squadrons in anything but small numbers, and that, unless the Air Ministry gets really busy, and at once, with the placing of orders, it will be impossible for the money voted in the last Air Estimates to be used up during the present financial year, and a large surplus will have to be returned to the Treasury. Thus the great talk about 3½ millions for the aircraft constructors will be largely "talk," and in the meantime the aircraft industry worries along as best it may with just enough orders to keep it from dying of starvation, while our pilots carry on with old types on which they have had to depend since the War.

In the past it has been customary for the Air Ministry to plead that if but little was done the reason was lack of money. Now that a reasonably large amount has been voted, it appears as if there were a dread of spending it. Or is it that those at the helm of advice are not at all certain in their own mind on what to spend it? One cannot help thinking that one reason for this hesitancy is in all probability due to lack of agreement between various technical departments, one wanting one thing and another inclining for something different, more often than not for little reason beyond that the department which succeeds in getting its views accepted then feels to have scored and be superior to other departments.

In the meantime, the old tag about the Irish, that they don't know what they want and won't be happy till they get it, seems to apply with considerable appropriateness. That this should be so is obviously

not to the advantage of the Empire. The strangest thing of all is that it does not seem to be realised that by these methods it is playing dangerously into the hands of those who wish to detach from the Air Ministry all control of naval aircraft. Although we should hesitate to admit that this would be a good thing for aviation, there is this to be said for it—that the Navy hitherto has had a habit of in the long run getting what it wants, or rather of ordering what it wants first and asking permission afterwards. To counter such tactics it might not be amiss to see some of that spirit applied by those in charge in Kingsway, with in this instance the absence of the necessity of having to ask for the funds after the event. Our constructors are ready to rise to any emergency demands made upon them.

The Expansion of the Air Force

As announced in FLIGHT last week, the expansion of the Royal Air Force, proposed as a result of the deliberations of the Special Committee of the Committee of Imperial Defence, which has been sitting under the chairmanship of the Marquess of Salisbury to consider questions of air defence and of the relationship of the R.A.F. to the Navy and Army, is to mean an increase of 34 squadrons in the authorised strength of the R.A.F. The cost to the country was estimated by Sir Samuel Hoare at approximately £5,500,000 per annum, although he did not think the expenditure involved this year would amount to more than £500,000.

As we have remarked above, the 3½ million pounds voted for new machines out of the Air Estimates early in the year promised generous support to the aircraft industry and a rapid growth of the R.A.F. In point of fact, up to the present time but a very small percentage has been actually spent on orders, and there is every reason to believe that, as already stated, large sums will have to be returned to the Treasury. That being so, it may be asked how is the Air Ministry to place sufficient orders to ensure that the newly-established 34 squadrons are adequately equipped with modern machines. Taking the average strength of a squadron as 10 machines (the actual

strength varies from 10 to 12 machines per squadron), and allowing another 10 machines per squadron as spares, the new increase will require 680 aeroplanes before the home defence is at full strength.

From having been reduced to a mere nucleus during the years following the War, the aircraft industry will now have to expand, and although that is certainly a healthy sign, the process must necessarily take time. Nevertheless, if the Government is really serious, and means the new increase to be more than a paper force, the industry may be depended upon to produce the machines. But it is essential that the various firms should be given, without a moment's delay, a clear intimation of what are the types likely to be ordered and, approximately, in what numbers. Vague talk about orders will not do. The firms must have something more concrete to go upon.

From the National and Imperial point of view, the Premier's announcement must be hailed with satisfaction. Although we refuse even to contemplate a war with our gallant French Allies, Great Britain has never, as Lord Birkenhead said recently, allowed the question of her security to be dependent upon moods and friendships. So also in the air. It appears that a certain amount of resentment is felt in some circles in France over the announced increase in British air strength. We think, with M. Flandin, that is a wholly mistaken point of view. Rather, in our opinion, should our neighbours across the Channel rejoice that, if the danger from Germany which they fear should materialise, a Great Britain with a strong Air Force would be a very much more valuable ally than would a Britain weak in the air. To us it seems that the position is this: After the War this country reduced her Air Force to a mere skeleton of its war-time strength, in the same way that we reduced our Army and Navy. France did not reduce her air force to anything like the same extent, and in spite of all that has been said, the British increase just announced must not be taken to indicate that we are becoming jealous of France's air power, but merely that our Government have at last realised that France—as FLIGHT has always maintained—was right, and that they are paying her the compliment of following her example.

ENTRIES FOR THE KING'S CUP

Circuit of Great Britain Handicap, July 13 and 14, 1923

| Registration Mark. | Entrant and Pilot. | Aeroplane and Engine. | | | |
|--------------------|---|--|--------|---|--|
| G-EBDO | Alan S. Butler (Major H. Hemming, A.F.C.) | D.H.37 (275 h.p. Rolls-Royce "Falcon 3") | G-EBFC | Douglas Vickers, M.P., J.P. (Capt. S. Cockerell, A.F.C.) | Vickers "Vulcan" 450 h.p. Napier "Lion". |
| G-FBEZ | George Robey (A. J. Cobham) | D.H.9 (450 h.p. Napier "Lion") | G-EAWS | Squad.-Leader Franks L. Robinson, D.S.O., M.C., D.F.C. | Boulton and Paul P.9 (90 h.p. R.A.F. 1A). |
| G-EBFK | Hubert Scott-Paine (Capt. H. C. Biard) | Supermarine "Sea Eagle" (360 Rolls-Royce "Eagle IX") | G-EBEP | Capt. A. F. Muir (Capt. A. F. Muir) | D.H.9 (230 h.p. Siddeley "Puma"). |
| G-EBFU | J. D. Siddeley, C.B.E. (Frank T. Courtney) | Siddeley "Siskin" (325 h.p. Siddeley "Jaguar") | G-EAPR | A. V. Roe (B. Hinkler) .. | Avro "Viper" (200 h.p. Wolseley "Viper"). |
| G-EBGT | Harry Tate (Capt. H. S. Broad) | D.H.9c (230 h.p. Siddeley "Puma") | G-EBCG | Lieut.-Col. Maurice Ormonde Darby, O.B.E. (Capt. R. H. Stocken) | A.D.C. D.H.9a (350 h.p. Rolls - Royce "Eagle VIII"). |
| G-EAGP | Lieut.-Col. F. K. McClean, A.F.C. (Flight-Lieut. W. H. Longton, D.F.C., A.F.C.) | Sopwith "Gnu" (110 h.p. Le Rhone). | G-EBGX | Lieut.-Col. J. Barrett-Lennard, C.B.E. (H. H. Perry). | Napier D.H.9a (450 h.p. Napier "Lion"). |
| G-EAMU | Sir Samuel Instone (F. L. Barnard) | D.H.4a (350 h.p. Rolls-Royce "Eagle VIII") | G-EBBW | Theodore Instone (George Powell) | D.H.34 (450 h.p. Napier "Lion"). |
| G-EBHA | The Rt. Hon. Sir William Joynson-Hicks, Bart., M.P. (L. L. Carter) | Gloucestershire "Grebe" (325 h.p. Siddeley "Jaguar") | G-EBDK | Frederick Phillips Raynham | Martinsyde F.6 (200 Wolseley "Viper"). |
| | | | G-EBDD | H.S.H. Princess Lowenstein-Wertheim (C. D. Barnard) | D.H.9c (230 h.p. Siddeley "Puma"). |

JULY 5, 1923

All pix. on this page are in Aerial Pageant, 1923



Box A.

THE FOURTH R.A.F. AERIAL PAGEANT

We confess we are not disappointed that our anticipations regarding this year's R.A.F. Aerial Pageant did not materialise. We rather expected a repetition of the previous year's magnificent display, with variations—it did not seem possible that a new and improved edition of this popular "Show" could be served up. Yet such was the case, for

seen by the large number of spectators that arrived hours before the opening of the actual proceedings. In fact by 2 o'clock about half of the expected 100,000 people already gave the various enclosures an animated appearance. As the morning turned to afternoon a gauzy film of cloud covered the whole sky, and, although it "looked like rain" this change



THE R.A.F. PAGEANT: Their Majesties the King and Queen arrive at Hendon, and are conducted to the Royal enclosure by Air Vice-Marshal J. F. A. Higgins.

the fourth Aerial Pageant, which took place with the usual punctuality and freedom from accident of any kind at Hendon last Saturday, presented an entirely new and different atmosphere—one full of interest from beginning to end. In other words, the fact that one had witnessed the previous pageants in no way lessened the quality of the programme given on Saturday.

During the morning, with its blue sky and bright sunshine giving promise of real summer conditions, Hendon aerodrome presented a busy appearance, what with machines arriving, making trial flights and sundry eliminating trials for certain of the afternoon's events being held, there was plenty to be

in the weather conditions proved a blessing, for it lessened the trying glare of the sun, thereby enabling us to witness the afternoon's proceedings with coolness and comfort.

This year Their Majesties the King and Queen came to see the Pageant, and stayed until almost the end, whilst other members of the Royal party present consisted of Queen Alexandra, the Duke and Duchess of York, the Empress Marie Feodorovna of Russia, Princess Beatrice, Princess Victoria, the Grand Duchess Xenia, and the Crown Prince of Sweden. The King and Queen were received by Air Vice-Marshal J. F. A. Higgins (Chairman of the Pageant Committee) and Air Vice-Marshal Sir Arthur Vyvyan. A very



ROYALTY AT THE R.A.F. PAGEANT: On the left H.M. Queen Alexandra, accompanied by Empress Marie of Russia and Princess Victoria, arriving at Hendon, and on the right the Duke and Duchess of York.

large number of celebrities were present, including Sir Samuel and Lady Hoare, the Duke and Duchess of Sutherland, Air Chief-Marshal Sir Hugh and Lady Trenchard, various members of the Air Council, Earl Beatty, accompanied by the Lords of the Admiralty, Major-Gen. Sir Frederick Sykes, Major-Gen. Sir Sefton Brancker, members of both Houses of Parliament, Air, Naval and Military Attachés of Foreign Governments, and the delegates attending the International Air Congress.

The first event on the programme was a photographic competition for the various stations, but this actually took place between 11 a.m. and 3 p.m. Competitors had to take two photographs of a point previously indicated on the map, and the pilot getting this point most nearly in the centre of the photograph was the winner. The result of this competition was: (1) Farnborough, F.O. R. Hood and F. H. Isaac; (2) Old Sarum, Flight-Lieut. R. L. Stevenson and Sergt. A. L. Worster.

At 3 o'clock precisely the second event, the first of the afternoon, started. This was the ever-popular Standard Avro Race for a challenge cup presented by Capt. the Hon. F. E. Guest. Eight stations were represented, viz.: Cranwell, Duxford, Flowerdown, Halton, Kenley (24th Squad.), Netheravon, Old Sarum, and Farnborough. The race started by the pilots getting into their machines, starting their engines and taking off. All got away very close together, and flew towards Mill Hill, the first turning point, then flew back over the aerodrome towards the second turning point near the Edgware Road. Netheravon passed over the 'drome first, followed by Kenley. The others followed in the following order: Farnborough, Cranwell, Old Sarum, Flowerdown and Halton neck and neck, then Duxford. On turning the second point, they started on a second lap of the same course, during which they maintained the same order, except that Cranwell for a

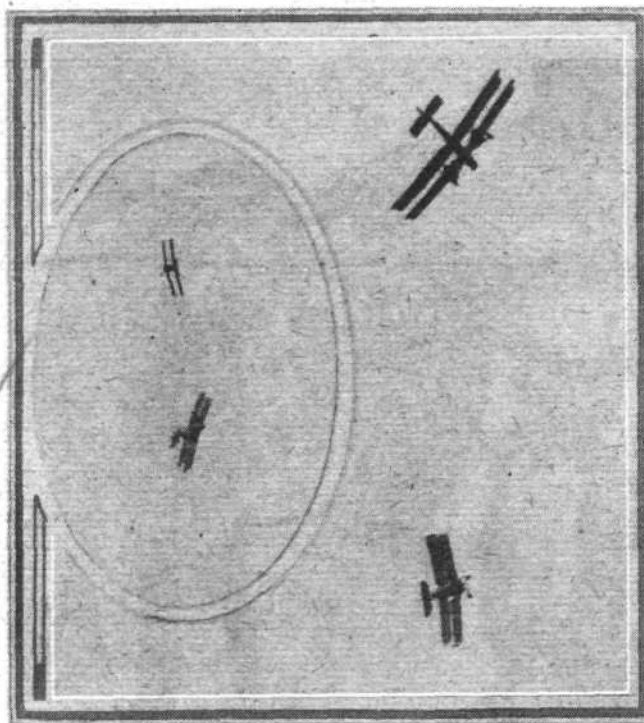
short time got ahead of Farnborough. In finishing they came in over the aerodrome, and flew past the Royal Box. They finished in the same order as given, Halton having got ahead of Flowerdown. Result: (1) Netheravon, F.O. F. E. Bond; (2) Kenley (24th Squad.), F.O. L. Hamilton, M.B.E., D.F.C.; (3) Farnborough, F.O. B. R. Carter.

Distance of course, about 12 miles.

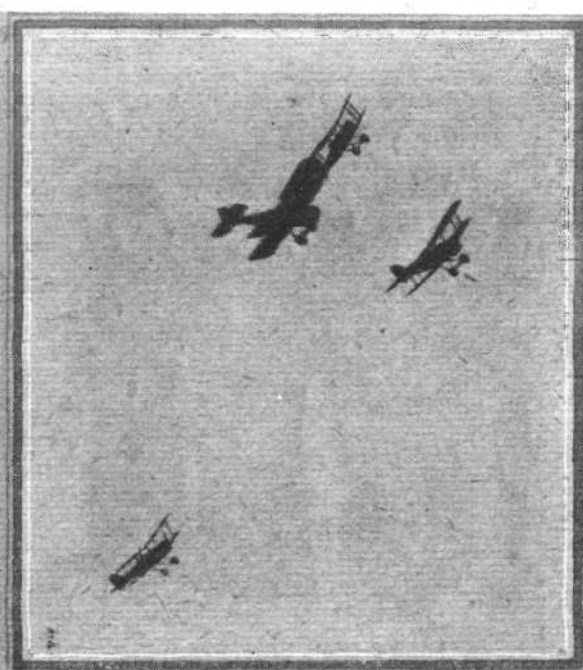
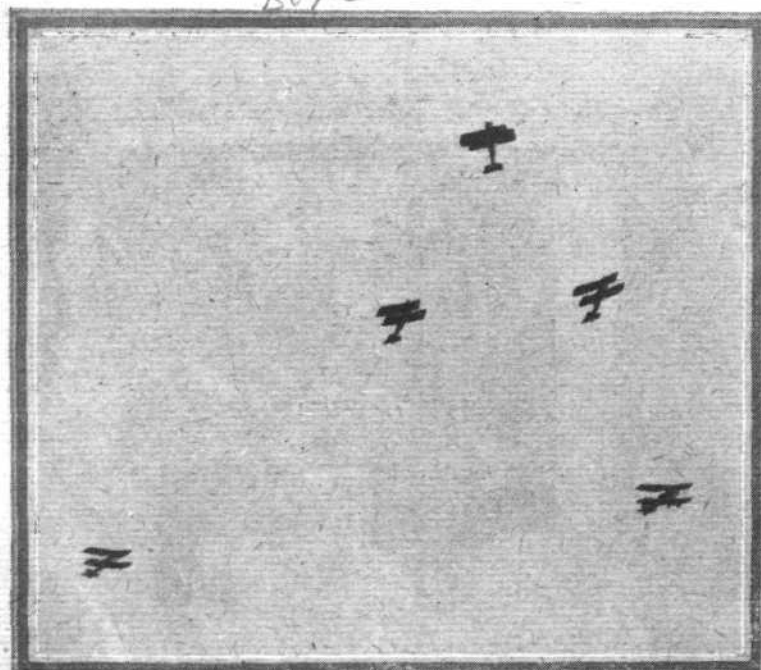
The next event was a Landing Competition (Avros), for which preliminary heats had taken place in the morning. A "field" 100 yards square was marked out by flags, and each competitor had to ascend to 1,000 ft., switch off and land in the "field" without running into the "hedges." The first try was made by F.O. R. Carrol (Farnborough, R.A.E.), and the way he "floated" almost vertically into the "field" would have made a helicopter turn green with envy. The next machine ran beyond the "field," carrying some of the "hedge" with it, but the third machine landed well within the mark, and obtained second place—Carrol being declared the winner.

Event No. 4 was an aerial combat between a twin-engined Boulton and Paul "Bourges" (Napier "Lions"), piloted by Flight-Lieut. R. A. de Haga Haig, and two Nieuport "Nighthawks" (Bristol "Jupiter"), piloted by Flight-Lieuts. P. W. S. Bulman, M.C., A.F.C., and E. R. C. Scholefield, A.F.C., D.C.M. The climb and

manoeuvrability of the "Nighthawks" was truly remarkable, although not altogether unexpected, but when the larger machine exhibited similar—but perhaps somewhat slower and sedately—qualities with a parently just as much ease, it was astounding. This aerial combat was a most pleasing spectacle to see, but, as with previous events of this kind, was really only thoroughly appreciated by those who could follow with an inner knowledge the technicalities of aerial fighting.



AN AERIAL COMBAT AT THE R.A.F. PAGEANT: A Nieuport "Nighthawk" and a Boulton and Paul "Bourges" manoeuvring for a position of advantage. Inset on left, the "Bourges" is seen looping out of the "Nighthawk's" line of fire.

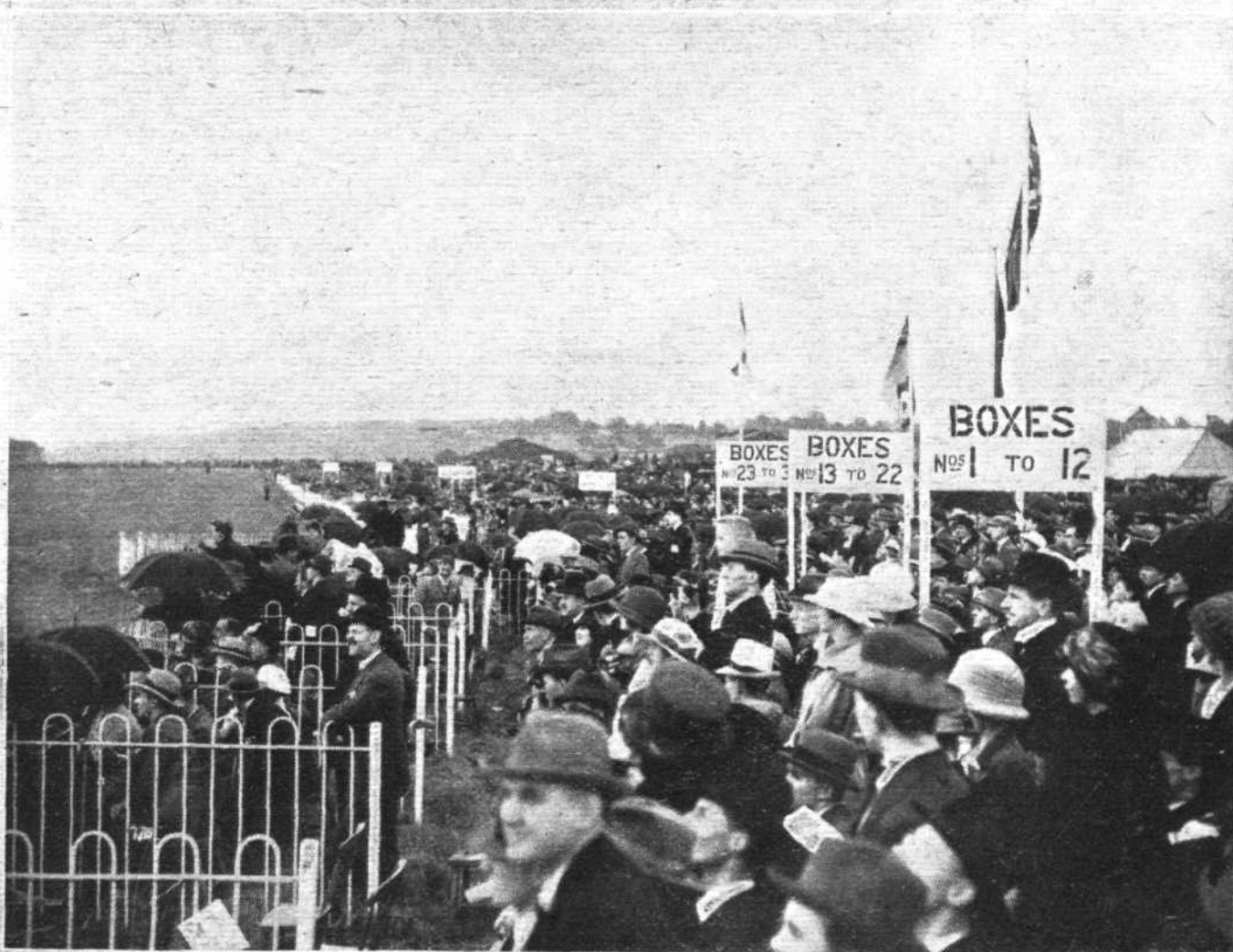


THE R.A.F. PAGEANT: On the left, "When Father says Loop, we all loop." A formation of S.E. 5a's giving a display of simultaneous "stunting." The five machines are seen just starting on a loop. On the right, simultaneous aerobatics at the R.A.F. Pageant. S.E. 5a's, in close formation, zooming.

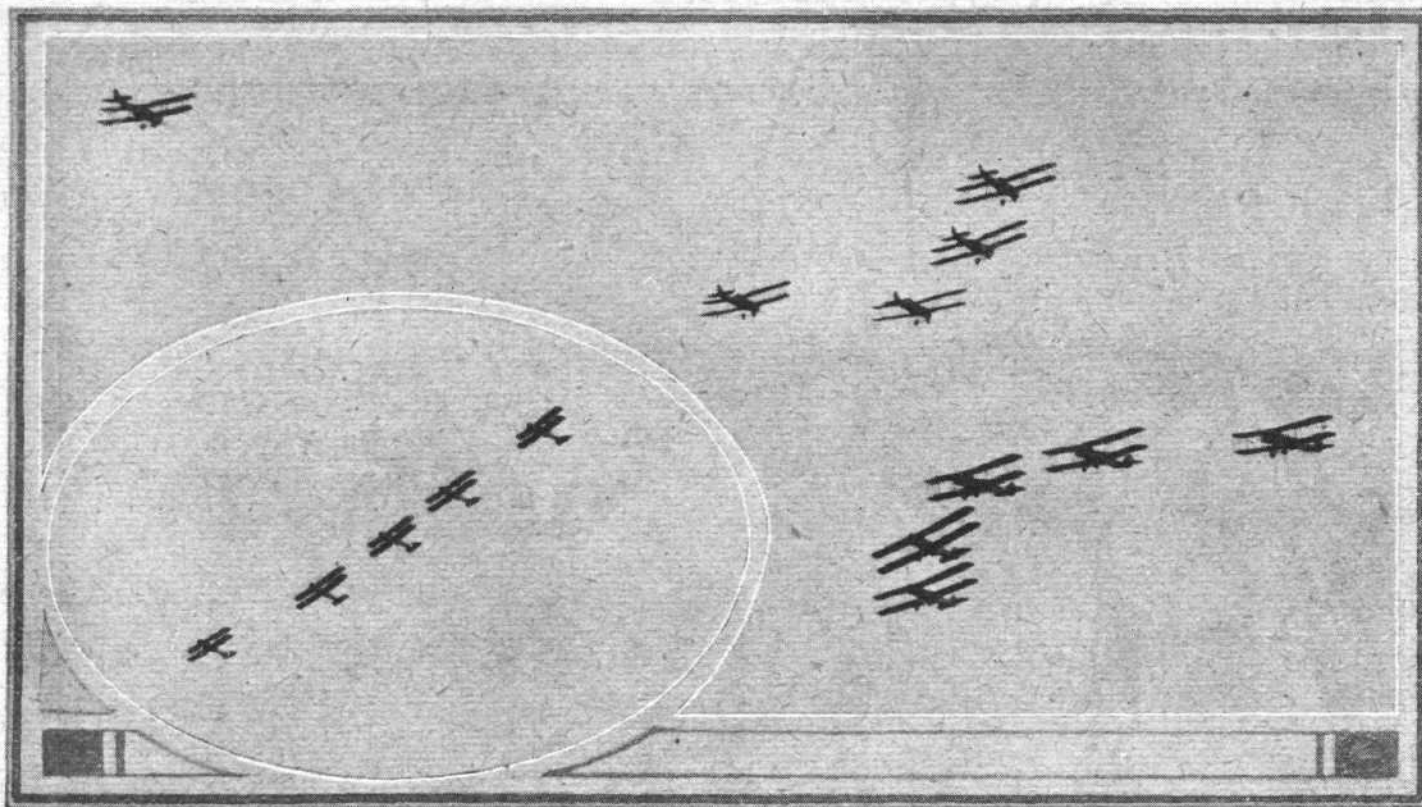
JULY 5, 1923

FLIGHT

Both these pix are in box for Aerial Pageant
1923 A.



THE R.A.F. PAGEANT : Above is seen a portion of the " Park " with some of the machines which took part in the afternoon's proceedings. Below, looking along the enclosure, towards the Royal Box. This shows only a small fraction of the crowd, the enclosure extending halfway round the aerodrome—out of the picture to the left.



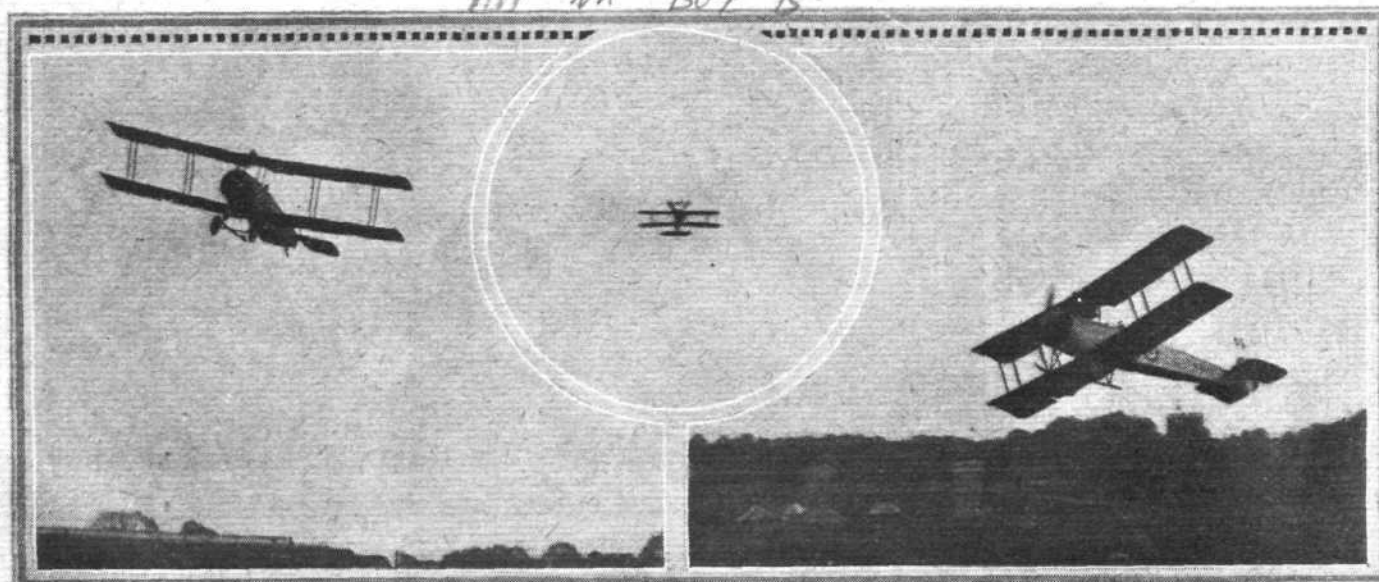
Box B
AIR DRILL AT THE R.A.F. PAGEANT : Ten D.H. 9a's put up some close formation flying. Inset, five of the D.H. 9a's show what can be done in straight-line flying.

The next event was, perhaps, the most interesting one of the day, and absolutely unique. This was the parade, and "fly past" of the various and latest types of aircraft now in use in the different branches of the Royal Air Force. The machines first taxied in single file, from the Park, past the Royal box, and then took off and flew round the aerodrome, with the result that within 15 minutes the air was full of all sorts and conditions of aircraft, from the large 1,000 h.p. Avro "Aldershot-Cub" to the 3 h.p. A.B.C. engine "Wren." The machines taking part in this event were as follows: Blackburn "Dart" (Napier "Lion"), single-seater torpedo carrier; Avro "Aldershot-Cub" (Napier "Cub"), long-distance bomber; Westland "Weasel" (Bristol "Jupiter"), two-seater fighter; Westland "Walrus" (Napier "Lion"), three-seater fleet spotter; Blackburn (Napier "Lion"), four-seater fleet spotter; Avro "Bison" (Napier "Lion"), four-seater fleet spotter; Supermarine "Seagull" (Napier "Lion"), amphibian flying-boat; Fairey "Flycatcher" (Bristol "Jupiter"), single-seater fighter (ship landing duties); Parnall "Plover" (Bristol "Jupiter"), single-seater fighter; Handley Page "Hanley" (Napier "Lion"), torpedo carrier; Fairey "Fawn" (Napier "Lion"), two-seater fleet reconnaissance; Gloucester "Grebe" (Siddeley "Jaguar")

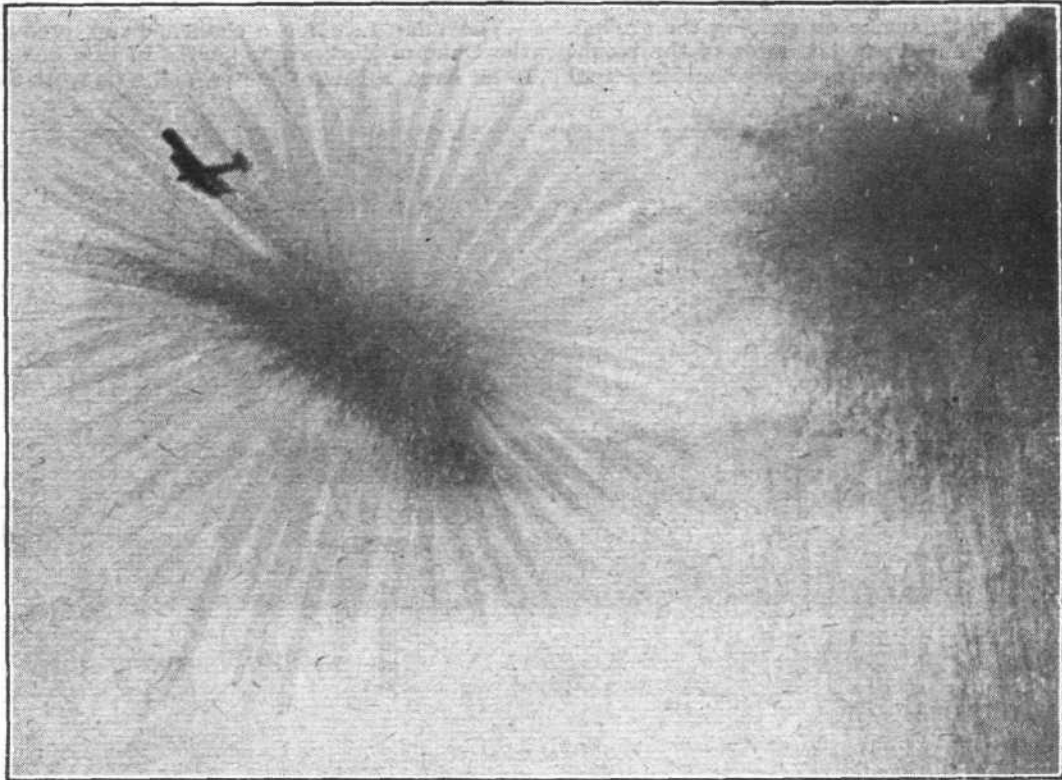
and the "Wren" (A.B.C. motor-cycle engine), light 'plane, built for the Air Ministry by the English Electric Company. Two Armstrong-Siddeley machines, the twin-engined, all-metal "Awana," and the famous "Siskin," did not "appear," whilst it had been hoped that the Vickers "Vanguard," the commercial version of the "Victoria" troop carrier, would be at the Pageant, but it could not be got ready in time. It was extremely interesting to study the way in which each type of machine took off and climbed. Large and small alike all gave good imitations of rockets! The "Wren troop carrier", although apparently suffering from slight indisposition, made a wonderful contrast, and flew remarkably well.

After this interesting demonstration, Flight-Lieut. Longton gave us one of his magnificent displays of "instructional aerobatics" on the Fairey "Flycatcher." Although an old turn, on a new mount, it was thoroughly appreciated, for we never get tired of seeing Longton's masterly flying. He went through eleven "stunts" in the following order: the loop, the half-roll on top of loop, the half-roll, the stalling turn, upside-down flying, the stall and vertical dive, the sideslip, the roll, the flat turn, the vertical spin, and the falling leaf.

The next event was an exhibition of drill in the air by 10 D.H.9a's from No. 39 Squadron (Spittlegate), the first Defence



All in Box B
AT THE R.A.F. PAGEANT : Flight-Lieut. W. H. Longton, in partnership with his Avro, defies Newton, Einstein and Co. with his crazy and (inset, centre) inverted flying.

Aerial Pageant 1923 Box A.


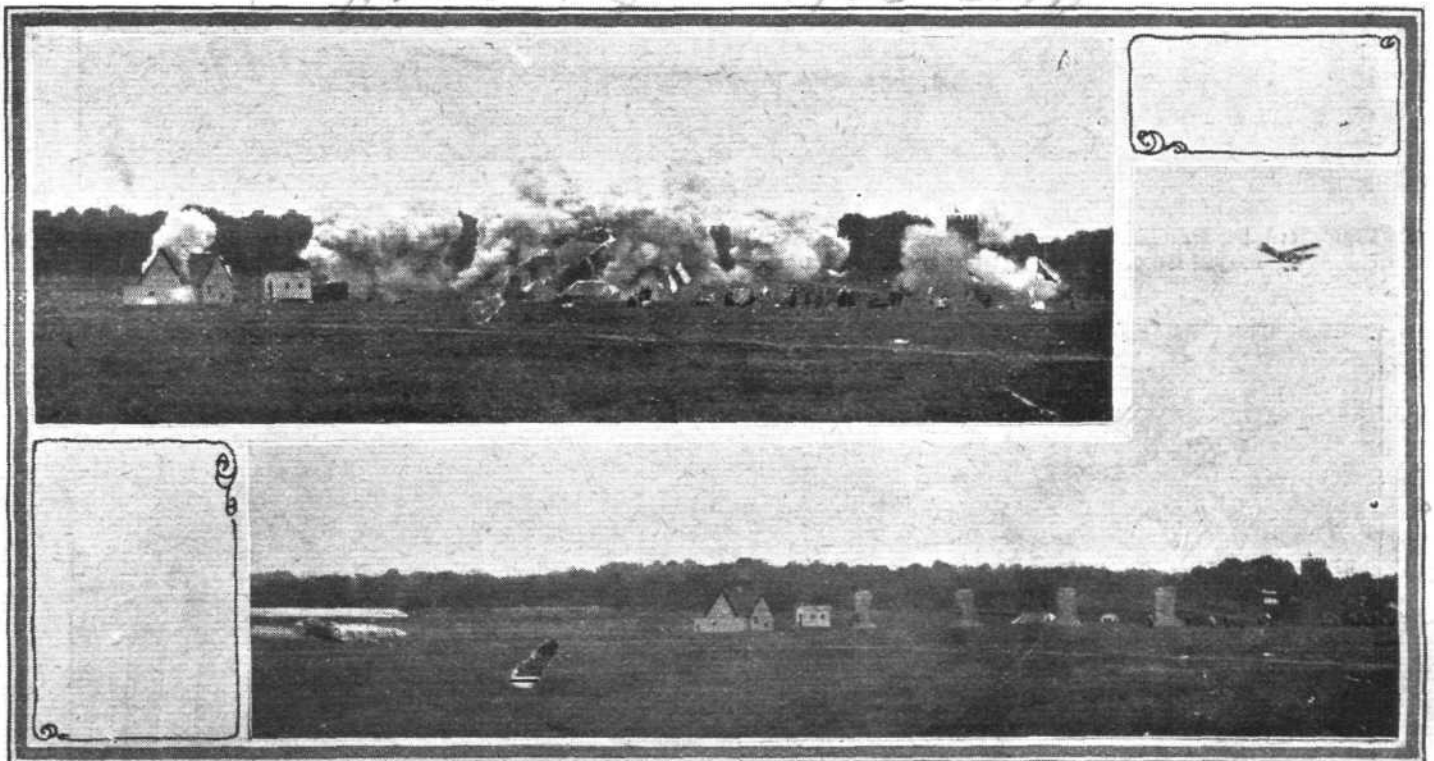
THE R.A.F. PAGEANT : A Handley Page 0.400 brings an eventful day's proceedings to a close with a final "Brock's Benefit," by discharging artificial cloud-screen bombs.

of London Squadron. They took off in formation in two groups of five, which once in the air turned off in opposite directions and then approached one another in V formation until a collision seemed inevitable. They turned off at the last moment, however, and then flew back and forth, executing a variety of evolutions. Altogether it was an extremely pretty display.

Longton appeared again after this, and gave us his extraordinarily wonderful demonstration of "crazy flying" on

an Avro. That this "turn" is extremely popular and amusing was evident by the cheers and roars of laughter heard all along the various enclosures. It is absolutely impossible to describe in words the antics he performed for even at the time it was difficult to tell what the machine was actually doing or which way it was flying!

The low bombing event which followed was another good "turn." In this five Sopwith Snipes, flying in single file, swooped down on a "temporarily disabled tank" and

Aerial Pageant 1923 Box A.


THE "STAR TURN" AT THE R.A.F. PAGEANT : Below, a small military post defending an important railway bridge is attacked by Arabs, and escapes on a Vickers Troop-Carrier, sent to their assistance. Sopwith Snipes attack the enemy whilst the garrison emplane, and a demolition party place charges to destroy the bridge, which, as soon as the Troop-Carriers and escort get away, blows up, as shown above.

discharged bombs thereon. Time and again they attacked, and one clearly saw the missile falling towards its mark, to burst with volumes of white smoke on striking the ground. Although there was only one direct hit, most of the bombs fell close enough to do considerable damage under actual

conditions. Flight-Lieut. T. C. Luke, M.C., was first in this event, and F.O. A. Jerrard, V.C., was second.

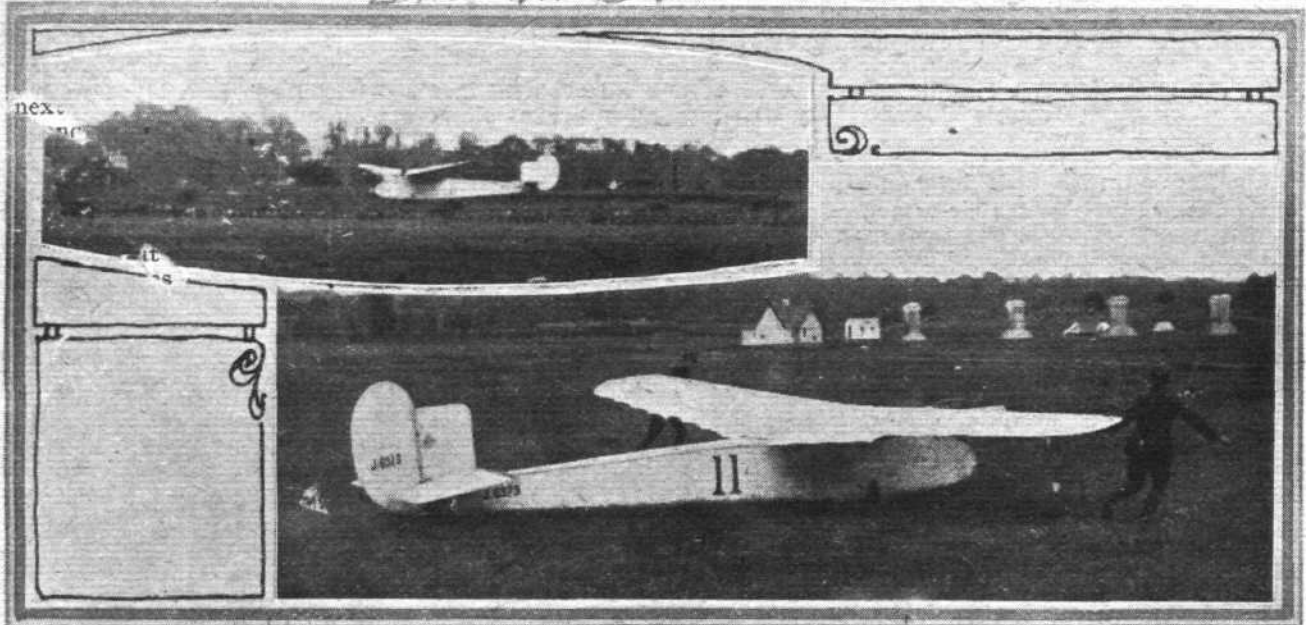
The relay race for a challenge cup, presented by H.R.H. the Duke of York, came next. In this, one team, consisting of an Avro, a Bristol fighter, and a Sopwith Snipe, from each

Box B



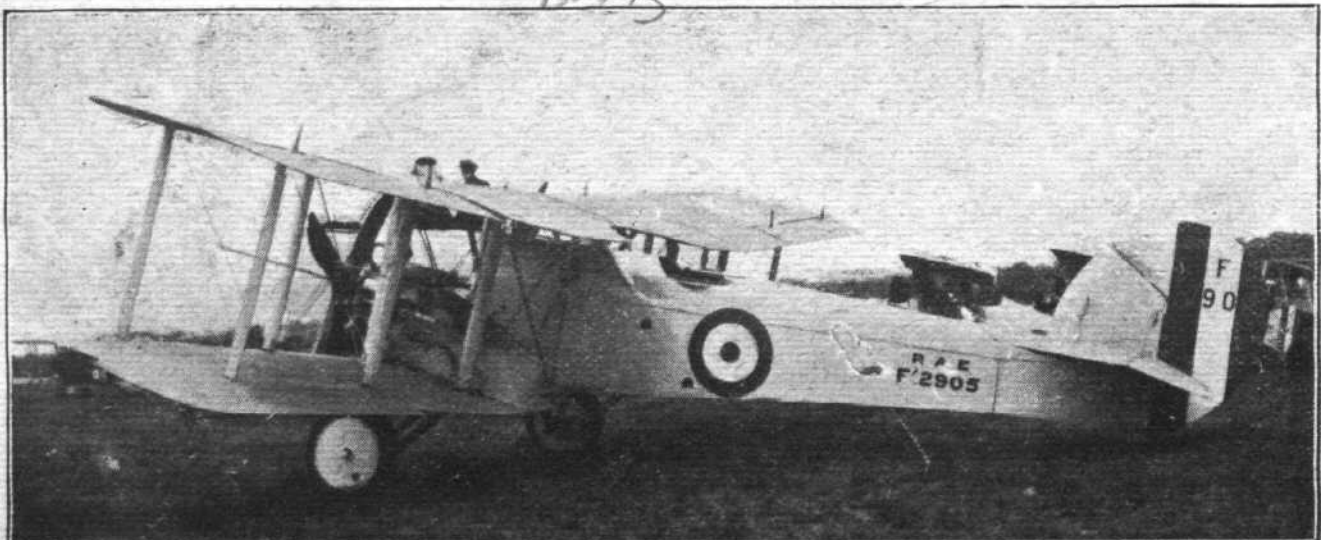
AT THE R.A.F. PAGEANT: The Avro "Bison," a fleet-spotting machine, fitted with a 450 h.p. Napier "Lion."

Both in Box C



AT THE R.A.F. PAGEANT: The Wren "Troop Carrier," with mechanics holding it back, dashes past the Royal Box. Inset: the "troop" makes a safe landing flying round the aerodrome.

Box B



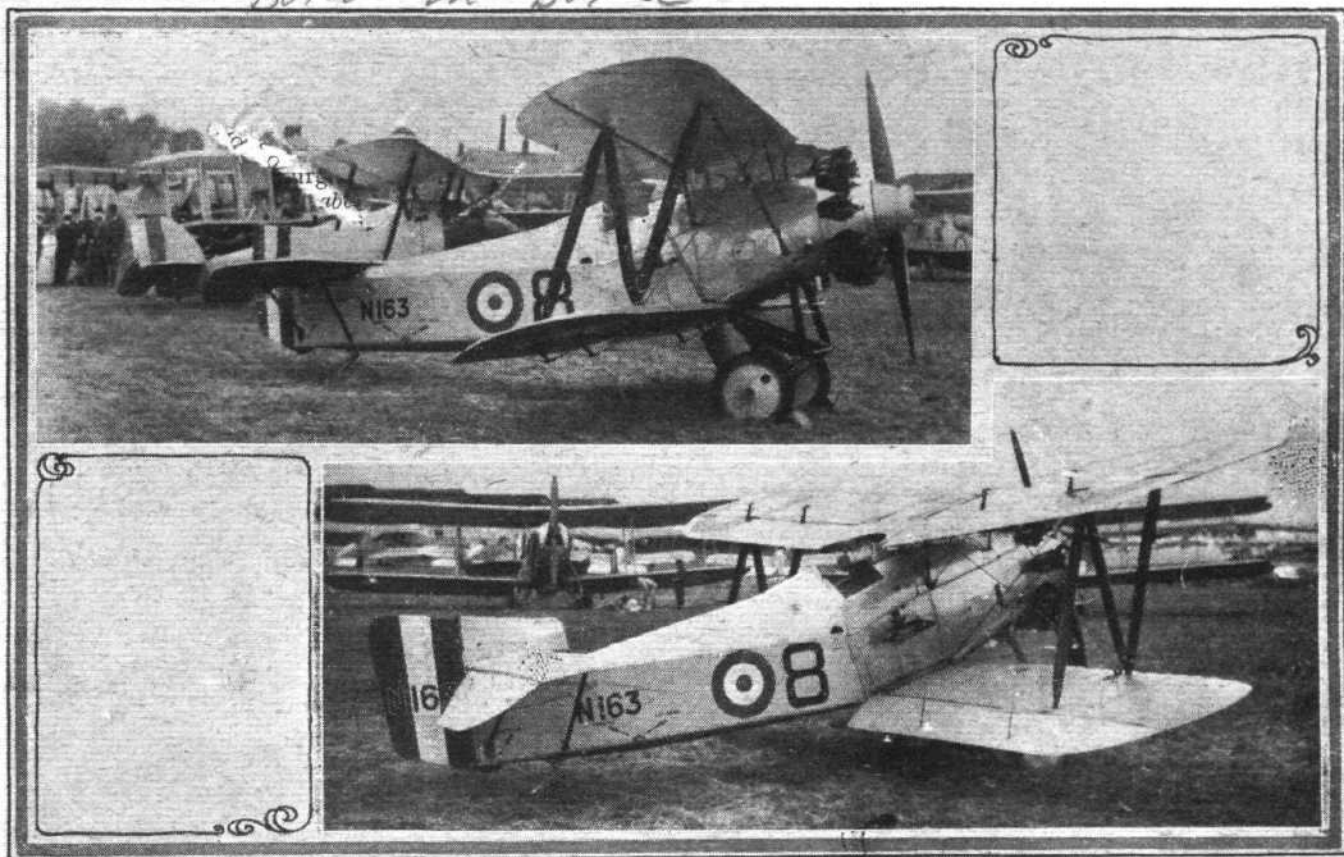
AT THE R.A.F. PAGEANT: The Boulton and Paul all-metal "Bourges," fitted with two Napier "Lions."

of six R.A.F. stations, competed (eliminating heats having been flown in the morning). The Avros started first over one lap of the course previously flown, and on landing each had to hand over the tally disc to its respective Bristol fighter, which then took off and flew over the same course, handing the disc to its waiting "Snipe" as before. The Snipes then started off

(F.Os. T. Rose, D.F.C., and V. P. Feather, and Flight-Lieut. J. W. Woodhouse, D.S.O.).

Event No. 11 was an attack on a bombing formation of three Vickers "Vimys" by five Sopwith "Snipes." The latter ascended to attack on news being received of the approach of the bombers, which, in the meanwhile, were being worried by

Both in Box C



A NEW MACHINE AT THE R.A.F. PAGEANT : The Fairey "Flycatcher" ship's 'plane, fitted with a 400 h.p. Bristol "Jupiter."

on the final lap, finishing past the Royal Box. The Avros finished their lap in the following order: Farnborough, Netheravon, Halton, Spittlegate, Northolt, and Upavon. The Bristol fighters finished in practically the same order, Northolt, however, getting ahead of Spittlegate. The Snipes maintained this order until just before the finish, when

a land battery of anti-aircraft guns (this was very realistic). As soon as the "Snipes" had attained sufficient altitude, the guns ceased fire and the "Snipes" proceeded to break up the bombers' formation, separating them from one another, and eventually forcing them to land in the aerodrome.

Five S.E.5a's, piloted by Flight-Lieuts. W. P. S. Bulman,

Box C



A NEW MACHINE AT THE R.A.F. PAGEANT : The Gloucester "Grebe," a single-seater fighter, fitted with a 350 h.p. Siddeley "Jaguar" engine.

Halton obtained the lead, and Farnborough dropped to fourth place. Result—(Last year's winner, No. 24 Squadron, Kenley.)—1, Halton (F.O. C. M. Vincent, D.F.C., Flight-Lieut. E. B. Rice, and Flight-Lieut. C. A. Stevens, M.C.); 2, Northolt (Flight-Lieuts. J. R. Howett, H. W. G. Jones, M.C., and R. H. C. Usher, M.C., A.F.C.); 3, Netheravon

M.C., A.F.C., E. R. Scholefield, A.F.C., D.C.M., G. S. Oddie, D.F.C., and F.Os. J. Chick, M.C., and H. H. Junor, D.F.C., then gave one of the best displays of simultaneous aerobatics we have seen. They looped together, rolled together, spun together, and performed various other evolutions so close together that thousands of hearts must have been in as many

mouths! The pilots, by the way, were from the R.A.F. Experimental Station—so 'nuff said!

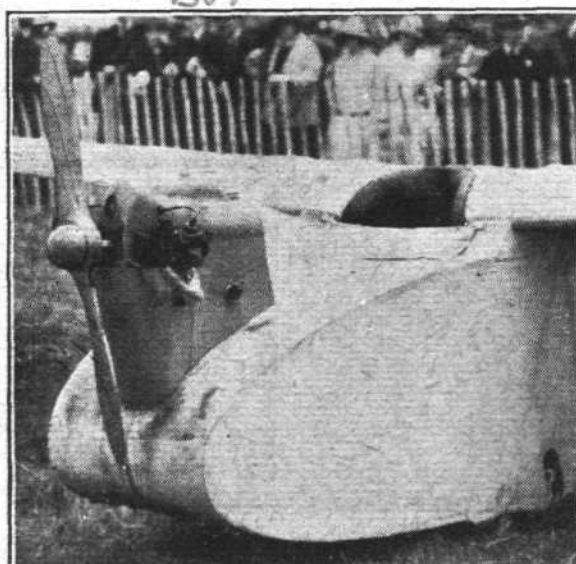
The turn of the afternoon then took place, well on to time (5.40). This was another little Eastern drama, based on actual happenings during the War. On the centre of the "stage" one saw an impressive railway bridge and sundry buildings. The small military garrison protecting this post was suddenly attacked by our old friends (or enemies?), the Wottnott Arabs. The garrison, being outnumbered, W.T.'d

for help, which, before you could say "Jack Robinson," appeared in the form of three Vickers troop carriers, escorted by five Sopwith "Snipes." The troop carriers landed beside the bridge, small parties of machine gunners emerging from their interiors and rushing to the assistance of the garrison. In the meanwhile the "Snipes" hold back the Wottnott Arabs with machine-gun fire, whilst the garrison emplane in the troop carriers, and a demolition party place charges under the bridge for the purpose of its utter destruction. When all was ready, the guard blew his whistle, and the troop carriers sailed away for safety. Then the bridge blew up, which so annoyed the Wottnotts that, after all falling down dead, they got up and made a dash, to the accompaniment of wild yells, for the public enclosures.

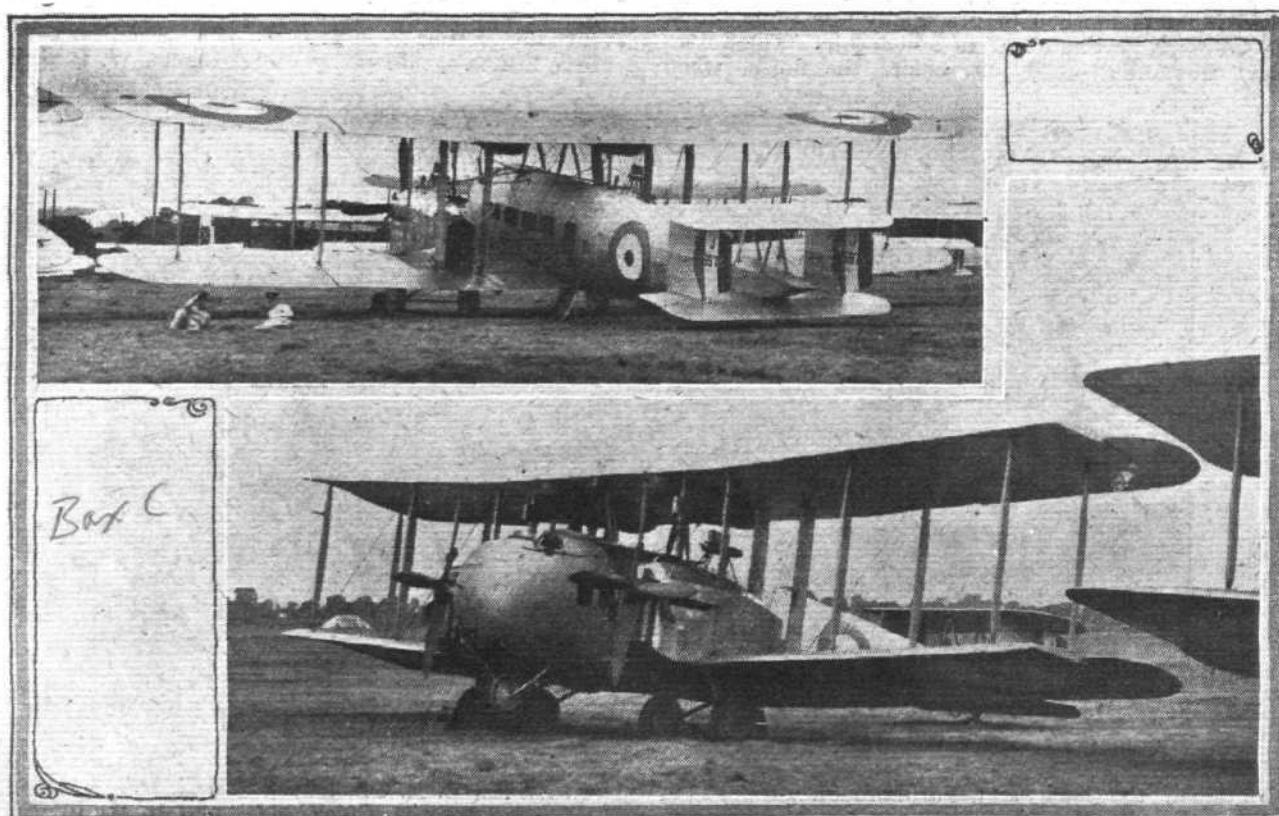
What remained of the spectators after the horrible slaughter then witnessed the final event of the day. This was of a fire-worky, set-piecy nature, and consisted of the formation of an artificial cloud screen and coloured smoke clouds at about 1,000 ft. above the ground—these being produced from a Handley Page 0.400. It was a very pretty finish, indeed, to a most enjoyable and thrilling afternoon.



A "close-up" of the 1,000 h.p. Napier "Cub" in the Avro "Aldershot-Cub," which made its first public appearance at the R.A.F. Pageant.



Another "close-up" of the other extreme. The 3 h.p. A.B.C. engine in the "Wren" light 'plane.



TWO TROOP-CARRIERS AT THE R.A.F. PAGEANT: Above, the large Vickers "Victoria" 25-seater, and below, the Vickers "Vernon," a slightly smaller version. Both have Napier "Lion" engines.

In conclusion, we wish to record our admiration for the excellent traffic arrangements for journeying to and from—especially the latter—the aerodrome. Both, as far as the

writer was concerned, and it certainly equally applies to many thousands of other spectators, were accomplished speedily, and without the slightest discomfort.

NOTICES TO AIRMEN

France : Aerodromes, Aerial Corridor, etc.

It is hereby notified :—

1. The following civil aerodrome is now available :—

Strasbourg (Entzheim).—Civil Aerodrome.

Position.—Lat. 48° 33' N., Long. 7° 38' E. Situated 10 kms. W.S.W. of Strasbourg. *Dimensions for landing.*—500 by 500 metres. *Height above sea level.*—151 metres (495 ft.). *Supplies.*—Petrol and oil are available in limited quantities. *Telephone No.*—Strasbourg 14-50. *Night Landing Arrangements.*—A row of landing lights has been installed.

Note.—This aerodrome is to replace that at Neuhoof, but for the present Neuhoof must continue to be used for customs purposes. The landing searchlight and the luminous landing T also remain temporarily at Neuhoof.

2. *Marseilles (Marignane).*—Civil Customs Aerodrome.

Ground Markings.—The levelled portion of this aerodrome is now defined by a system of ground markings similar to those described in Notice to Airmen No. 110 of 1921, para. 1.

Wind Indicator.—A wind sleeve is installed near the centre of the S.W. side, with a landing T about 130 metres N.W. of the wind sleeve.

3. *Le Bourget.*

Night Landings.—The luminous landing T surrounded by a circle of coloured lights, 20 metres in diameter, previously situated near the first concrete hangar in the centre of the E. side of the aerodrome, has now been moved to the N.E. corner, about 100 metres to the N. of the small metal hangars (near the aerial lighthouse).

A red circle of lights indicate that left-handed circuits and a green circle that right-handed circuits are to be made.

4. *Aerodromes for Night Landing.*

The following is a list of French aerodromes equipped for night landing :—

Bordeaux, Le Bourget, St. Inglevert, Lyons, Nimes, Marseilles, Strasbourg,* Toulouse, Valenciennes.

* See note at foot of paragraph 1.

5. *Aerial Corridor.*

In addition to the corridors between France and Belgium previously notified, aircraft may now cross the Franco-Belgian frontier between Condé-sur-Escaut and Jeumont. This corridor is situated on the Paris-Brussels official route.

6. *PREVIOUS NOTICES.*—*Marignane.*—Notice to Airmen No. 98 of 1922. *Paris-Brussels Route.*—Notice to Airmen No. 23 of 1923.

(No. 36 of 1923.)

Air Navigation (Amendment) Order, 1923 : Prohibited Areas

1. THE Air Navigation (Amendment) Order, 1923, dated May 4, amends the list of prohibited areas given in Schedule VII of the Air Navigation Order, 1922 (and republished in Notice to Airmen No. 67, 1922), by the deletion of the following areas : Orkney Islands, Osea Island, and amplifies the Order of 1922 by forbidding any photography from an aircraft of any portion of a prohibited area, except with the written permission of the Secretary of State.

(No. 40 of 1923.)

Civil Aircraft Flying to or from Aerodromes of Experimental Establishments

CIVIL aircraft flying to or from aerodromes of Royal Air Force Experimental Establishments should always keep clear of aircraft engaged in experimental flying, and should give such aircraft priority when landing. The pilots of aircraft engaged in these operations are usually engaged in recording results and in watching instruments, and have few opportunities of keeping a look-out for other aircraft.

The Experimental Establishments referred to are as follows :—

(1) Royal Aircraft Establishment, South Farnborough, Hants.

(2) Aeroplane Experimental Establishment, Martlesham Heath, Suffolk.

(3) Marine and Armament Experimental Establishment, Isle of Grain, Kent.

(No. 44 of 1923.)

Malta : Prohibition of Aerial Photography

1. AERIAL photography over any part of the island of Malta, including its dependencies and territorial waters, is prohibited.

(No. 49 of 1923.)

LONDON TERMINAL AERODROME

Monday evening, July 2, 1923

THE change in the weather has caused everything on the Aerodrome to look up considerably, although, as regards passenger traffic, this has been at record figures for some time, in spite of the unfavourable weather.

Handley Page Transport are still running at top pressure, and their machines are being employed to their utmost capacity, it being a rare occurrence in these days for there to be an empty seat, while the Air Union are also enjoying good loads. The early morning newspaper machine of the Air Union company is running with commendable regularity, and on several occasions the newspapers have been in Paris shortly after 7 a.m. I understand that there is another newspaper service to be run between Lympne and the Belgian coastal resorts.

The Daimler Service to Amsterdam and Berlin is now beginning to pick up the volume of traffic which was expected when this service was first organised, and, taking into consideration that this is, to all intents and purposes, an entirely business route, as compared with the Paris route, which is more or less patronised by pleasure seekers, the number of passengers travelling to and from Berlin is very gratifying. The Manchester route, however, does not show much sign of looking up, although several notable people have realised its time-saving capabilities and patronised the airway. The Dean of Manchester, for instance, who had an engagement in Manchester in the morning, and was due to officiate at a wedding in London at 2.30 in the afternoon, travelled down by the Daimler machine from Manchester to London, and expressed the opinion on alighting at Croydon that by no other means could he have kept his appointments.

Increase of Customs' Facilities

WITH the increase in both the passenger and goods traffic, the Customs authorities have required extra accommodation, and there has been built, alongside the arrival platform, a new shed for the Customs' examination of passengers' luggage. This new building will enable three or four times as many passengers to be dealt with, in any given time, as could be managed under the old arrangements.

During the week Mr. Barnard, chief pilot of the Instone air-line, improved on his previous record of flying to Cologne and back in a day, by leaving Brussels in one of the Napier D.H.34's of the Instone air-line in the morning, flying to Croydon from there, then flying to Cologne—calling at Brussels *en route*—and returning *via* Brussels to Croydon again the same evening. In all, he was in the air 8 hours 37 mins.

I understand that in addition to the 4 A which has been entered by Sir Samuel Instone for the King's Cup, and will be piloted by Mr. Barnard in an attempt to repeat last year's success in this competition, Mr. Theodore Instone has entered a D.H.34, to be piloted by Mr. Powell, for this race round Britain.

The number of delegates from the Air Congress visiting Croydon did not come up to expectations, and hardly justified the special train to the aerodrome. This, however, was all to the good as regards short flights, as it enabled every visitor to take a trip in the air. In fact, so well did the various air companies provide for short flights, that even the guard and attendants on the special train were taken up—the guard being especially amused by the insignificant appearance of his train as viewed from the air.

THE INTERNATIONAL AIR CONGRESS

ON Saturday evening last the labours and pleasures of the great Air Congress concluded with an official banquet at the Hotel Victoria to the delegates and those immediately concerned with the work of the Congress. In the morning, at the Institution of Civil Engineers, a full session, at which 20 countries were represented, was held as the concluding item in the more serious side of the Congress, followed by a visit to the R.A.F. Pageant at Hendon. At the final full session a series of resolutions put forward by the various groups were confirmed without discussion. Sir Samuel Hoare, Secretary of State for Air, presided. Sir Samuel described the week's work of lectures, entertainments, and dinners as having proceeded almost at the pace of a cinema film. He had been astounded at the comprehensiveness and variety of the subjects covered. The standard of the papers and the discussions showed a very distinct advance on previous congresses. The standardisation of material had become a more and more important question as international air communications developed. They had discussed the improvements to be made in the matter of weather reports; the very important question of the health of pilots; the question of full scale experiments; and, in particular, the progress that was being made with various kinds of measuring instruments. Then there was engine design—one of the most vital questions in the whole field of aviation. The question of winter flying was also very important, in view of the work contemplated by such Arctic explorers as Amundsen and Stefansson. The big question of airships was of particular interest to the British Government in view of possible developments in the future of an air route to India and the Far East. Another question of great interest at this moment to the British Government was that of air posts.

He had been particularly interested in that discussion, for it was only in the last few days that the Postmaster-General and he had appointed a small Government Committee of Inquiry to see how far British air posts could be developed. Lastly, there was the great question of long-distance air routes, and they had made very valuable observations in the discussions on that subject in connection with the need of developing those longer international air routes upon an international basis. As Secretary for Air, he should take most careful and serious note from the British point of view of the very valuable points that had emerged from their deliberations on all those questions.

Sir Samuel Hoare emphasised the value of personal intercourse between men of many nations engaged in working out the common problems of a great subject, and said he hoped they would say that in that respect the Congress had not been a failure. Certainly from the British side they had welcomed the opportunity of meeting upon a common field the representatives of twenty different nations spread over the whole world, and he was quite confident that the personal intercourse between the British delegates and the distinguished public men from overseas would be of great value in the future to British aviation generally. He felt that the British organisers were entitled to their grateful thanks.

It was not usual, he continued, for one Minister to praise another—indeed, in the present state of the world it was not usual for any one to praise Ministers at all—but he desired to say how grateful he was to the Duke of Sutherland, the chairman of the Main Committee, for the part he played in making the Congress a very great success. Throughout the time the Duke had shown his interest in aviation, he had spared no effort whether it be in actual flying, in offering prizes for development in civil aviation, or in helping to organise that great Congress. He should like to couple with his congratulations his thanks to the Duchess of Sutherland, who had played an equally distinguished part in making the social side

of the gathering so successful. He also desired to express his thanks to Major-General Sir F. H. Sykes, whose name was as well known as any in the field of British aviation, and without whose help on the Executive Committee they could not have reached the success they believed they had attained. He would like to mention the name of Lieut.-Colonel O'Gorman, who had made a great reputation in the United Kingdom, particularly in the field of scientific research, and who had been responsible for making the arrangements for the lectures and the reading of papers. Lastly, he wished to express his appreciation of the services of Lieut.-Col. W. Lockwood Marth, the general secretary of the Congress, who had greatly helped to make the proceedings run smoothly and successfully. He was given to understand that although the decision had not yet been made, it was very probable that their next "merry meeting" would be with their old friends the Belgians, at Brussels. In conclusion Sir Samuel said:—"You will go back to your countries with the best wishes of England for the development of your national aviation. You will go back with the knowledge that in Great Britain we are not only bent upon developing British aviation, but that also we venture to regard you all as comrades of the air, and in the field of aviation and in the science of aeronautics we wish you success in our allied effort for the development of flying."

Of the resolutions confirmed the first was put forward by Spain, Rumania, Holland, Norway, Italy, and Belgium, at a meeting under the presidency of France, and urged "that in the interests of aerial navigation the Governments be asked to unite in subsidising the trans-continental air services as speedily as possible."

The second resolution was that "from the evidence now accumulated of the physical condition of pilots who have flown for years the medical section of the International Air Congress affirm that, given reasonable flying hours, they have no evidence to show that pilots deteriorate more rapidly than in other employments, and the data and curves already available indicate that these pilots maintain a condition above the normal for their age."

The remaining resolutions confirmed were as follows:—

"The International Air Congress of Aerial Navigation urges the International Commission for Air Navigation to evolve some uniform scheme of posting the weather forecasts in all air stations, and of compiling a leaflet of essential advices to be handed to pilots."

"That as soon as possible an International Conference be held, with delegates appointed by their respective Governments, to study and define the general principles of private international law relating to the air, and to submit propositions of law for ratification by the various nations concerned."

"That this International Air Congress invite the International Commission for Air Navigation to consider the advisability of setting up a permanent International Commission for the Standardisation of aircraft materials and component parts, and for this purpose to invite delegates from the various national standards organisations to report on the matter."

"That the International Air Traffic Association should be invited to approach the postal authorities of the various European Governments with a view to discovering the air transport time-tables which would best suit them for the carriage of mails, and this body should then communicate this information to the various air transport companies concerned."

"The Congress urges all aerodynamic laboratories to establish such close relations as will guarantee the pooling of their respective experiments and the comparison of results."

THE DELEGATES AT LANCASTER HOUSE

THE Right Hon. Sir Samuel Hoare, Minister for Air, was Chairman on Tuesday night, June 26 last, at a dinner at Lancaster House given by the Government to the members of the International Commission for Air Navigation.

In proposing "Our Guests," Sir Samuel said that never before in London had there been gathered together so many public men so well-known in Aviation, and in the name of the Government he welcomed them, not only as representatives of the Air Congress, but as representatives of the I.C.A.N.

There had been, he said, three meetings of the Commission since the Treaty had been notified, and its work, in addition to creating a "League of Nations for the Air," had been of the greatest value to aviation. It had been attempting to perform the work of making use of international air communi-

cations over the world—to collect air information that would remove obstacles interfering with the development of air intercourse between one country and another.

He desired to welcome the entrance to the Commission of our friends and Allies, the Italians—this being the first occasion they had had the honour and pleasure of welcoming Italy into the councils of the Commission.

Referring to the Prime Minister's announcement that day in the House on the Government's intention to make an increase in the strength of the country's military air forces, Sir Samuel said that he wished to make the Government's position perfectly clear. "They were not," he said, "making the increase in their military air force in any way, or with the slightest intention, as a menace or threat to any other country."

We make it solely because we believe that in the world as it is now it is the duty of this country, as of every other country, to make sure of its own national defence." It was an increase that neither contemplated the likelihood of war nor the danger of any attack, but just as we left it to our neighbouring nations to judge the standard of their own national defence, he felt sure Britain must be her own judge in making sure her air defence. He did not regard military aviation, looking to the future, as the most important field, and he felt sure that the outcome of the deliberations at the Convention would be of the greatest value to the development of civil aviation in the future.

M. LAURENT-EYNAC, French Minister for Aviation, in reply, expressed his thanks to the British Government for their welcome. He was a strong believer in aviation—international air communication would help them in understanding each other, and would promote mutual sympathy and interest. Aviation was a terrible thing in war, but in peace it would ensure liaison between all the peoples of the world. France understood, and agreed with, the point of view of the British Empire because they had the same thought—the security of their frontiers.

M. Piccio, Italian representative, also responded, and expressed regret for the absence of M. Mercanti, who was injured in a fall whilst flying over the Alps.

THE OFFICIAL BANQUET

At the banquet at the Hotel Victoria which closed the official visit of the delegates to the Congress, the Duke of Sutherland presided over a distinguished company. M. Flandin, President of the French Aero Club, in proposing the toast "The International Air Congress, London, 1923," spoke in the very highest terms of the reception accorded the foreign delegates. Referring to the importance of publicity concerning aeronautical matters, M. Flandin said that at the present time the winning of public opinion was a fundamental necessity for the successful development of any new idea. The rapid progress made as soon as public confidence was gained constituted thereafter the most substantial form of encouragement to the promoters.

M. Flandin continuing said: "The considerable increase to the British Air Force recently announced by the Prime Minister of Great Britain may be considered a tangible expression of the realisation by every British subject of the primary importance of aviation in the maintenance of national security. The vital necessity of national security, now realised by our Allies and hosts, is precisely that which has led us in France, where continual menaces have rendered our sensibilities more acute, to be the first to take the action—that of maintaining our air defence in a manner worthy of our nation—now followed in this country for identically the same reasons, which are of a purely pacific nature. It is therefore our most ardent wish that you may be spared the criticisms and expressions of frowning wonder to which we were subjected when taking exactly the same step, and in all sincerity we wish you good luck in the speedy fulfilment of your aeronautical programme. Similarly we are delighted to know that the Premier of Italy has resolved to support with the fullest possible authority the developments and progress of Italian aviation."

He had proposed a motion at the Congress recommending co-operation in opening up new airways of world-wide interest which belonged in very truth to human kind in general, since the idea of their creation had been the dream of a thousand years. He hoped that the voice of the delegates would show that they were with him in this endeavour to be heard by their respective Governments.

Major-General Sir Frederick Sykes, responding, said he

Amongst those present were:—

Lieut.-Col. the Right Hon. Sir Samuel Hoare, Mons. Laurent-Eynac, Maj. the Right Hon. Sir John Baird, His Excellency Baron Gonsuke Hayashi, G.C.V.O., Colonel Piccio, His Excellency Il Marchese della Terretta, Maj.-Gen. Sir W. Sefton Brancker, the Right Hon. Sir Joseph Cook, G.C.M.G., the Hon. Dadiba Merwanjee Dalal, Mons. Pierre-Etienne Flandin, the Right Hon. Sir William Joynson-Hicks, Brig.-Gen. Shizuma, the Duke of Sutherland, General Don Francesco Echague, the Right Hon. Viscount Peel, Col. Van Crombrugge, Major the Right Hon. the Viscount Sandon, M.P., Rear-Admiral Tamaki Tosu, C.B., Rear-Admiral M. F. Sueter, Col. E. Mossberg, Sir Herbert Hambling, Brig.-Gen. A. J. E. Brink, Lieut.-Col. Casse, Maj.-Gen. Sir F. H. Sykes, Senor Don Alberto Gutiérrez, Mons. Michel Gavrilovic, Capt. W. Wedgwood Benn, Lieut.-Col. Prince Pridi, Mr. Phya Buri Navarasth, Mr. Chao-Hsin Chu, Mons. Knud Gregerson, Senhor M. Teixeira-Gomes, Sir Walter F. Nicholson, Col. Saconney, Commandant Emile Herrera, F. G. L. Bertram, Esq., Capitaine de Corvette Sablé, Sq.-Ldr. J. P. C. Sewell, Mr. Okuyama, Lieut.-Col. J. T. C. Moore-Brabazon, Lieut.-Aviateur Chevalier Willy Coppens, Group Capt. L. F. Blandy, A. Plesman, Esq., Capt. R. J. Goodman Crouch, Lieut.-Col. M. O'Gorman, Ing. Umberto Nobile, Lieut.-Col. W. Lockwood Marsh, C. P. Robertson, Esq., Mr. J. J. Ide, etc.

believed the great development of the future lay in the air. What had been done at the Congress was only the stepping-stone to what they were going forward to do in the future. They had done something to help civil aviation, which they believed to be one of the greatest factors in the world.

The Duke of Sutherland, proposing the toast "Our Guests," said that as a consequence of the Conference the public were beginning to realise the true value and importance of aviation in its bearings on the future. They were glad to welcome so many representatives of other countries. If ever there was a time when real international peace and good feeling were needed it was the present—that was, if they were to carry through and extend throughout Europe and beyond the great commercial aviation schemes that they believed would make for the ultimate benefit of all those nations and peoples.

Major-General Sir W. S. Brancker, Director of Civil Aviation, supporting the toast, said that that day they had seen aviation at its highest pitch of military efficiency. He rejoiced in the decision to increase the strength of the Military Air Force, not because he believed in nations going to war or that he liked war, but because that increase was going to put new life into the research and design departments in connection with civil aviation, restore blood to the pallid corpses of the manufacturers, produce good pilots and mechanics, and bring nearer the day when air transport would be enabled to shake off the enervating shackles of Government control.

The toast was responded to by Colonel P. R. Piccio (Italy), Rear-Admiral Tamaki Tosu (Japan), General Echague (Spain), Captain E. S. Land (United States Navy), Capitaine de Corvette L. Sablé (France), and Colonel A. E. M. Van Crombrugge (Belgium).

Admiral Tosu said Japan was very much behind in aeronautical matters, but every nerve was being strained to promote efficient air services and to foster an interest among the people of Japan in the great future of civil aviation. He looked forward to the time when it would be quite an ordinary occurrence to fly to Japan, with the consequent valuable improvement in communication between Japan and Europe. He hoped that the Congress might hold one of its conferences in Tokio.

The Lord Mayor's Reception

ON Wednesday evening, June 27, the delegates to the International Air Congress were received at the Mansion House by the Lord Mayor (Mr. E. C. Moore) and the Lady Mayoress, who were accompanied by Sheriffs Killick and Studd. Besides the Secretary of State for Air and the Under-Secretary, many other persons of note in connection with aviation were present. An enjoyable musical and vocal programme was provided for the entertainment of the guests.

Reception at Hampden House

ON Thursday evening last the Duke and Duchess of Sutherland held a reception at Hampden House, Green Street, W., to meet the principal delegates to the International Air Congress. The reception was preceded by a dinner,

given by the Duke, at which a large number of distinguished guests were present.

The Air Secretary's Garden Party

ON Friday last, June 29, the Secretary of State for Air, Sir Samuel Hoare, and Lady Maud Hoare, gave a garden party at their residence in Cadogan Gardens, to meet the Duke and Duchess of York. The Infante Alfonso and the Infanta Beatrice of Spain were amongst the very large gathering present, which included various members of the Air Council, the Diplomatic Corps, the Parliamentary Air Committee, delegates to the International Air Congress, etc. Throughout the afternoon the Band of the Royal Air Force played selections, whilst No. 39 Squadron gave an exhibition of flying above the grounds.

PAPERS AT THE INTERNATIONAL AIR CONGRESS

APPARATUS AND EQUIPMENT RECENTLY CONSTRUCTED IN THE AERODYNAMICS DEPARTMENT OF THE NATIONAL PHYSICAL LABORATORY

By R. V. Southwell

DURING the last three years, considerable additions have been made to the equipment available at the National Physical Laboratory for experimental work in aerodynamics. A new tunnel of increased size has come into operation, permitting the testing at high wind speeds of models fully twice the scale of those employed hitherto. It has been equipped with roof balances of novel design, and the model aeroplane which has been ordered for test in it (a 1/5 scale model of the Bristol Fighter) has been received from the makers and fitted with a specially designed 3-phase induction motor for driving its airscrew; this renders possible, for the first time, an experimental study of the effect of the slip-stream upon the behaviour of a machine. Of the five wind tunnels already existing in the Aerodynamics Department, two have been improved as regards the maximum wind-speed available by means of modifications to fan or honeycombs—one by the provision of special electrical supply for running at very low wind speeds, and one by the installation of roof balances in addition to the standard bottom balance, and by attachments fitted to the latter which enable the three component forces and three component couples acting on a given model to be measured at one setting over a wide range of angles of pitch and yaw. Finally, special apparatus, of a kind which can be employed in any channel at will, has been designed and constructed for the investigation of problems relating to airscrews, stability and control, and the exploration of airflow in general.

(1) *The Duplex Tunnel*.—This tunnel stands in a room 150 ft. long, 70 ft. wide and 40 ft. high, across which a cellular wall (for eliminating eddies in the return flow) is built at the section where the tunnel begins to diverge from the rectangular form into the two conical chambers which contain the fans. The rectangular portion is 14 ft. wide by 7 ft. high, and about 80 ft. in length; the position occupied by the models is about 50 ft. from the intake. There are two honeycombs in the tunnel, with cells 6 ins. square, one near the intake and one near the other end of the parallel portion. The roof of the tunnel is specially designed to support roof balances from which the models may be suspended by means of wires, and interchangeable trap doors are provided, so that the wires can be brought through the roof at any convenient place. The two fans are 11 ft. 6 ins. in diameter, with a maximum speed of 1,400 r.p.m. Each motor can develop 200 h.p., the control being on the Ward-Leonard system of armature voltage regulation, with an additional fine control on the field circuit. The switch gear is placed below the tunnel, immediately under the motors, and is operated from the platform by press-buttons on the control panel.

The air current in the Duplex Tunnel has been explored for uniformity of velocity and direction, the velocity being practically everywhere within $\frac{1}{2}$ per cent. of the mean. The direction of the wind at various points was determined by observing the no-lift position of an aerofoil attached to a balance; the results indicate that the wind is parallel to the centre-line of the tunnel within 0.1° .

The steadiness of the flow has not yet been observed by means of a photographic gauge, but from observation of the pressures obtained in pitot tubes, and at the hole in the side of the tunnel, there is little doubt that the airflow is at least as steady as in any other tunnel at the Laboratory. The maximum speed attainable is about 110 ft. per second—a value slightly higher than was anticipated.

(2) *Duplex Roof Balances*.—The roof balances designed for the Duplex Tunnel are somewhat similar to those used on the 7 ft. tunnels (and described by Sir R. T. Glazebrook in the appendix to his paper), but they have been modified in some important particulars. The lift balance is arranged to measure either the sum or the difference of the wire tensions, and will thus give both the lift and the rolling moment on the model. The second balance has been simplified by the introduction of a wire to take the vertical forces at the tail.

(3) *Three-Force and Three-Moment Apparatus*.—This is an attachment to the main balance of the 7 ft. No. 2 wind tunnel, designed to enable the balance to measure the three forces and three moments which act upon a model aeroplane in a symmetrical presentation. Values of the three forces and three moments on a model can be obtained for a range of angles of yaw without stopping the wind, as the whole of the subsidiary beam system rotates with the upper part of the balance supporting the model.

(4) *Continuous Rotation Apparatus*.—This apparatus was designed to measure, either for a complete model aeroplane or for wings alone, the rate at which the rolling moment varies with the angular velocity of roll when the latter quantity is small. Similar apparatus has recently been constructed at the Royal Aircraft Establishment, but this was not intended for use at very low rotational speeds, and is not suitable for that purpose, because the friction torque of the supporting bearings is included in the measurement of rolling moment. The present apparatus substitutes a two-point support for the ball bearings of the Royal Aircraft Establishment design, and the gear ratio between motor and model has been made much greater, with the object of securing steady running at a very low speed of rotation of the model.

The method of using the above apparatus is as follows:—The model (which must be carefully balanced) is rotated at various speeds, first in one direction and then in the other, and readings of the rolling couple are taken on the roof balance. This balance is directly calibrated by applying a known couple to the model. The readings of the balance are plotted against the speed of rotation of the model, and the difference of the readings at equal speeds of rotation in opposite directions gives twice the rolling couple produced by that rate of roll. Special precautions are required for dealing with incidences above the critical angle, where the couples are often small and the unsteadiness very marked.

The motor is run from a battery supply, the speed being controlled by a potentiometer adjustment of the armature voltage; very steady running can be secured by this means. The maximum rate of rotation obtainable with the gearing described above is about one turn in six seconds, and in order that the curve of rolling moment may be carried right up to the auto-rotation speed, spiral gear has also been provided, interchangeable with one of the worm drives.

(5) *Apparatus for Testing Airscrews*.—[An illustration was given showing this apparatus, but the explanatory notes would be unintelligible without the illustration, and are therefore not given.—Ed.]

(6) *Null-Reading Wind Direction and Speed Meter*.—The head of this instrument consists of five hypodermic steel tubes arranged symmetrically about a hollow cone, of which the apex points into the wind. Four of the tubes are bent so that their open ends form pitot tubes inclined at 45° to the axis of the cone, one pair being in each of two planes mutually at right angles. In order to determine wind direction, the instrument must be turned so that there are equal pressures in each pair of opposite tubes; the axis of the instrument is then along the wind. The fifth tube has its open end well inside the hollow cone, and registers a suction which is proportional to the square of the wind speed; thus, the wind speed can be determined, when the axis of the instrument is along the wind, from the difference of pressure between the air in any one of the four outside tubes and that in the suction tube. Calibration is effected by comparing the instrument with a standard pitot tube.

The spindle carrying the instrument is mounted on a turntable fixed either to the floor or to a wall of the wind tunnel; thus the angle through which the head has been turned when the yaw tubes register a zero reading can be read directly. The instrument can also be turned about an axis joining the two yaw tubes by means of a rack out on a circular arc which is rigidly attached to the tubes coming from the head; this is operated by a pinion connected to the fixed base and sector, which is grooved to guide the circular rack piece. The centre of the arc is a point equidistant from each of the openings of the yaw and pitch tubes, and hence the head can be turned to point into the wind without shifting its position in space. The pinion can be operated from outside the tunnel by means of the inclined rod; this is provided with two universal couplings, so that it may form a connecting link with a handle or lever outside the tunnel. Pitch is read off from a scale of degrees engraved on a circular sector. With care, this instrument can be used to measure wind directions correctly to $1/10$ th degree.

(7) *One-fifth Scale Bristol Fighter Model*.—A model of a Bristol "Fighter" aeroplane has been constructed to a scale of 1/5th full size, and is now undergoing tests in the Duplex wind tunnel. Its principal dimensions are:—Wing span, 7 ft. 10 $\frac{1}{2}$ ins.; chord, 1 ft. 1 $\frac{1}{2}$ ins.; overall length, 5 ft. 0 $\frac{1}{2}$ ins.

The wings, tail-plane, fin, rudder, etc., are of aluminium, and the body is a composite structure of wood, sheet steel and

angle; it is fitted with an aluminium engine cowling, inside which is an outline model in wood of the "Falcon" engine. In order to avoid distortion, the airscrew has been made from a steel forging; it is driven by a 3-phase induction motor specially designed and constructed for this purpose in the Department. A small motor-generator has been purchased to supply 3-phase current for this motor, the generating set

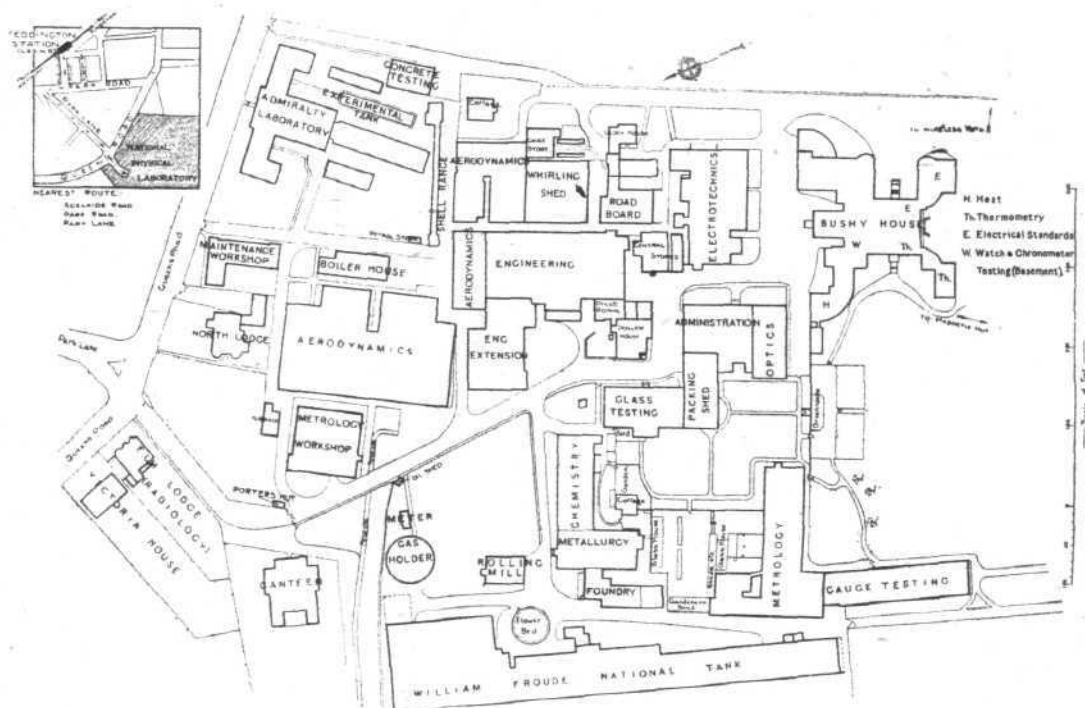
being run from a 110-volt battery supply in order to secure steadiness. Voltage and frequency on the A.C. side are independently variable, so that the motor can conveniently be used for a variety of airscrews of different pitch. The current from the motor-generator to the motor in the model is taken through mercury cups attached to the guard of the drag balance.

THE ANNUAL INSPECTION OF THE NATIONAL PHYSICAL LABORATORY

On Tuesday, June 26, the General Board made their annual inspection of the National Physical Laboratory at Teddington. A large number of visitors were present, representing various branches of the Government, local authorities, university colleges, prominent engineering firms, societies for scientific research, etc., etc. They were received by Sir Charles Sherrington—the President of the Royal Society and Chairman of the Board—Sir Arthur Schuster, Vice-Chairman, and Sir Joseph E. Petavel, Director.

boat hulls, and seaplane floats are also tested in this department.

Whilst the other sections visited were not directly connected with aeronautics, indirectly the latter frequently calls upon their aid in the solution of some problem, or otherwise benefits by the investigations carried out from time to time. It is only necessary, therefore, briefly to record here the various departments included in this interesting tour of inspection: The Engineering Department, for determining the fatigue



A General Plan of the various Departments and Buildings at the National Physical Laboratory, Teddington. From this it will be seen that the N.P.L. "covers a lot of ground" in more ways than one.

The visitors were broken up (metaphorically, of course) into small groups, each of which started on an independent tour of the numerous and various departments of the N.P.L. Of these, the section devoted to Aerodynamics offered perhaps the greatest attraction. Here the various wind channels—including the new duplex channel—were seen in operation and described. The William Froude Tank also created a great deal of interest. In this special experiments were in progress on the steering qualities of a single-screw cargo boat. Flying-

and strain ranges of various materials under varying conditions; the Metallurgy Department, for ferrous and aluminium alloys research, photomicrography, etc.; Meteorology Department, standard weights and measures, measuring instruments, etc. (several new instruments have been added to this section); Physics Department—optics, sound and general; Electrotechnics, divided into five divisions, including wireless section. The large area covered by the N.P.L. is shown in the accompanying plan.

Personals

To be Married

A marriage has been arranged, and will take place in September, between Wing-Commander L. A. PATTINSON, D.S.O., M.C., D.F.C., Royal Air Force, younger and surviving son of Mr. and Mrs. Hugh Lee Pattinson, of Lowlynn, Beal, Northumberland, and MABEL COPELAND CAPPER, A.R.R.C. Croix de Guerre, elder daughter of Colonel WILLIAM CAPPER, C.V.O., and Mrs. Capper, of Pentwyn, Clyro, Hereford.

Married

The marriage took place on July 2, at 12 noon, at Holy Trinity Church, Newark, between Mr. CHARLES E. H. ALLIN, D.F.C., R.A.F., eldest son of Mr. and Mrs. E. Allen, of Sea

Point, Cape Town, and MARION, daughter of Mr. and Mrs. W. BURKE, of Caythorpe, Lincs.

Items

Lieut. G. F. C. FLORMAN, Assistant Military Attaché for air duties at the Swedish Legation, has returned to London after several months' absence in Sweden.

Major NOBILE C. GRAZIANI, who was until recently Air Attaché at the Italian Embassy, has now been made honorary A.D.C. to the King of Italy.

Commander DON JUAN LEGUIA Y SWAYNE, Air Attaché at the Peruvian Legation, returned to London on June 25 from Spain.

DERBY EN FÊTE FOR MR. F. H. ROYCE

WHETHER by coincidence or design the unveiling of the statue at Derby of Mr. F. Henry Royce, of Rolls-Royce aero-engine fame, on Wednesday last week, the day following the announcement by the Premier of the Government's great move to place our aerial arm upon an adequate footing, the event was particularly appropriate to the happenings of last week. To honour this great engineer a distinguished company travelled by special express to Derby, at the invitation of the Rolls-Royce Company, and incidentally to inspect the magnificent works which have been built up as a necessity of the requirements grown out of the Rolls-Royce car and the different Rolls-Royce aero-engine units which so materially assisted to shape history during the War. In getting the very large group of visitors to Derby, and back and in the handling of them throughout the ceremony and the day, we boldly assert that more efficiency and perfection of organisation have never been experienced. This feature of the day was an outstanding testimonial to the spirit which is inspired in his immediate associates, and throughout the entire undertaking by the personality of its managing director, Mr. Claude Johnson. Yet during the whole proceedings, with one exception, the name of the "man behind the gun" was not heard and, except to those who knew him, his modesty kept him in such retiring positions that it was hardly known he was present.

Sir Samuel Hoare, the Minister for Air, was, unfortunately, unable to be present owing to his Cabinet engagements, but the Duke of Sutherland consented to act as Sir Samuel's deputy, and very effectively carried out his task.

At the luncheon Lord Wargrave, Chairman of Rolls-Royce, Ltd., presided, supported by the Earl and Countess of Birkenhead, the Duke of Sutherland, Mrs. Claude Johnson, Professor and Mrs. Derwent Wood, and the Mayor of Derby (Ald. O. Ling).

Amongst those also present were Lord Montagu of Beaulieu, Lord Herbert Scott, the Bishop of Derby, Mr. J. H. Thomas, M.P., and Mr. G. H. Oliver, M.P.

Lord Wargrave, in proposing the health of Mr. Royce (who was not present at the luncheon), made a few personal remarks with regard to Mr. Royce, the toast being received with enthusiasm.

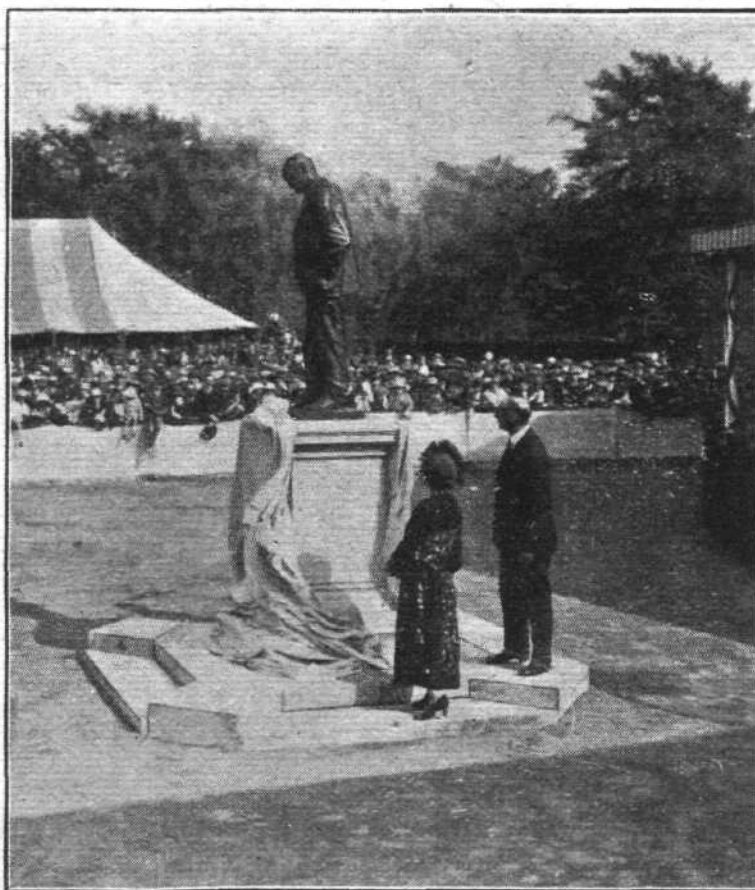
Lord Birkenhead, who in his absence responded for Mr. Royce, then followed with some observations upon his distinguished work. He said an old Greek saying laid down for our advice that we should acclaim no man as happy until he dies. Certainly it had been the practice both of the ancient and the modern, with very few exceptions, to erect a statue to a man while he still lived. The exceptional achievements of Mr. Royce have admitted in his case of an exception extremely flattering to the achievements of a remarkable life. He established an industry in this country which had won the admiration and envy of the civilised world. The words "Rolls-Royce" had, indeed, almost passed into current speech. It was an amazing circumstance that five-eighths of the engines that were used in fighting aeroplanes in the Great War were made by the company. The positive achievement which was involved in this statement was astounding. There were many claims to the claim who won the War. In military circles there was one view, in naval circles another, in aerial

circles there was still another. And he would be very interested to hear how it could be contended that any single individual had made a greater contribution to the War which so largely determined it—success or failure in the air—than the man the results of whose inventive genius equipped five-eighths of the aeroplanes and seaplanes we used in the Great War. Certainly the services of such a man were not extravagantly rewarded by an O.B.E. He was not without hope that His Grace the Duke of Sutherland, who had devoted himself with so much zeal, energy, and efficiency to his new duties, would raise his powerful voice in order to see that greater justice was meted out to one of the most remarkable living Englishmen.

For centuries we had lived in constant and absolute dependence on our maritime strength to afford security to the inhabitants of the island. Military strength, maritime strength, these in turn, and often working in co-operation, had insured the position and the existence of this island and this Empire through the centuries. Today we were approaching

a new element. The past had been with armies and fleets; is it certain the future will not lie almost certainly in the air? It was by no means impossible that in the short period of ten years the position of the Secretary of State for Air would be of greater strategical importance either than that of Secretary of State for War or First Lord of the Admiralty. No man living could assign limits to the part that would be played in the air, not merely commercially in times of peace, but on occasions of great war if the world were at once so mad and so unhappy to allow itself again to be involved in the convulsions of a great war. By a strange and not unhappy chance there had coincided with this celebration that day a Ministerial statement as to the intentions of the Government in relation to the air. It is reasonable to say quite plainly that it would not have been possible for this or any other Government in three months or six months or twelve months to do all that requires doing, and he thought it

was fair to say that in his judgment at least the statement made by the Prime Minister in the House of Commons and by Lord Curzon in the House of Lords make it plain that the Government had adopted the right and necessary decision. They had taken it, if he understood their contention aright, boldly, and while Lord Wargrave stated that they had committed themselves to a one-Power standard, he was not sure whether so much was definitely stated; but they did state this—that they committed themselves to a principle which was indispensable, that the defensive force of this country should be such as to afford an absolute security having regard to the strength of any country that was geographically in a position to strike at this country in the air. If there were any proposal of limitation he was certain this or any other Government would welcome it with the promise that we had enough to make the existence of this country safe. With less than that we would not be content. More than that we did not ask for. The Rolls-Royce Company's part had been illustrious in the years that had passed, but he was certain of this, that the last contribution had not yet been made by the resourcefulness of Mr. Royce and the distinguished young men whom



The statue of Mr. F. H. Royce at Derby, unveiled by the Countess of Birkenhead last week.

he had gathered round about him and whom he had inspired by his own methods and own talents. Anxious days might still lie in front of them. It was inevitable we should look to this distinguished company to rise once again to the necessities of the day and to prove that measured side by side with the resource and inventiveness of the greatest countries of the world the name of Britain shall stand as high as it had ever stood, and the reputation and prestige of the great firm of Rolls-Royce would be found high in the roll of honour amongst the engineering firms of the world.

The Chairman read the following congratulatory telegram it had been decided to send to Mr. Royce:—"Two hundred and eighty guests assembled here at a luncheon to meet Lord Birkenhead prior to the unveiling by the Under-Secretary for Air of your statue desire me to convey to you their deep appreciation of the work you have done for your Empire, and the hope that you may long enjoy health and vigour and continue your good services and to enjoy the happiness which you so richly deserve. They add hearty congratulations on Air-Worthy Certificate being granted by Air Ministry in respect of the Rolls-Royce 650 h.p.—Condor Wargrave."

Following luncheon at the Derby Assembly Rooms, the visitors made a tour of the works, the aero-engine shops being a particularly fascinating section. Here were seen the various units which had given so fine an account of themselves during the War, with such improvements as had resulted from the lessons then and since learnt.

The tour round the machine and erecting and testing shops was an education in accurate and precise manufacturing methods; the time and care taken in the testing of every operation, both as to the accuracy of the dimensions and the strength of the material and, in the case of such units as crankshafts, the accuracy of the balance, gave evidence of the fact that nothing except what is right in every respect and accurate within such limits as are in some cases represented by a thousandth of an inch, can pass the rigid examination to which each piece is put during the processes of manufacture.

We were very interested in the care with which the stamped cylinder jackets were being acetylene welded to the machined steel cylinder barrels, and in the testing of each piece and the hardening and tempering under scientific conditions where the results are of known quantity, and nothing is left to chance. The welded water jackets, for instance, are tested hydraulically to a pressure of 25 lbs. per square inch.

Very important and most interesting was the final test of the big engines coupled to the Heenan and Froude hydraulic brake. Here the engines are tested at full loads and full speed.

The visitors were able to see in the different engine-testing shops such engines as the 270 h.p. Falcon, of 12 cylinders, 4 ins. bore and 5½ ins. stroke, turning at 2,000 revolutions per minute, with a propeller-shaft speed of 1,179 revolutions per minute. This uses petrol at the rate of 19 gallons per hour and oil at the rate of 7 pints. Its weight is only 730 lbs. During the War it was principally fitted to the Bristol Fighter class of aeroplane.

The Eagle also shown was of the Series IX. It also was of 12 cylinders, in this case 4½ ins. by 6½ ins., and developing 360 h.p. on the brake at 1,800 revolutions per minute, and weighing 960 lbs. The propeller speed in this case being the same as the crankshaft, to which it is directly coupled. The Eagle engine is an improved model of that used for the trans-Atlantic flight of 1919 and the flight to Australia. This engine was extensively used for bombing and fighting machines during the War by Handley Page, De Havilland, etc., and also for flying boats. It is now being extensively used for commercial purposes, as, for instance, the London-Paris air service.

The Condor engine (Series III) is another 12-cylinder, 5½ ins. bore by 7½ ins. stroke, with a brake horse-power of 650 at a crankshaft speed of 1,900 revolutions per minute, and the propeller geared to 815 revolutions per minute. This engine weighs 1,290 lbs. and is an improvement on the 1 A type Condor fitted to the big Avro bombing planes. The new engine, although 300 lbs. lighter than the 1 A type, gives the same horse-power.

With a few minutes' interlude for tea, a move was made for the unveiling ceremony of the statue in Derby Arboretum, where the most complete arrangements had been installed.

Lord Wargrave presided, and during his opening remarks said: "Mr. Royce is known to all of you as a great man with a great career. But for one moment let me tell you of the difficulties that he has overcome in reaching that career. His father died when he was a child leaving his family in impecunious circumstances, and this man—as he is now—then a boy between the ages of 10 and 11, had to go out and

earn his living, and serve as a newspaper boy to Smith and Sons, selling papers round the streets. At the age of 11 he was able to get a further year's education, and after that he was apprenticed to a locomotive works. By his brain, his industry and his determination he rose step by step to the eminence he occupies today in the opinion of his countrymen. We are honoured by the presence of many of the distinguished statesmen of the country today, and we are especially honoured, when the Air Conference is being held in London, by the presence of the Deputy Air Minister, the Duke of Sutherland, who will address you in a moment, prior to the unveiling ceremony by the Countess of Birkenhead."

The Duke of Sutherland, Under-Secretary of State for Air, said he had been lucky enough to number amongst his friends in the past Charlie Rolls, who, jointly with their great designer, Mr. Royce, had given his name to their car and engine. They had heard a great deal recently of motor gliders. That term referred to generally the light aeroplane, but if such a thing existed on the ground, it would undoubtedly be the Rolls-Royce car. When they came to the manufacture of aero-engines, then indeed the question became a more serious one. When your engine breaks down in a car, you merely stop on the road, but when such a thing occurs in the air, every occupant of that machine is in jeopardy of life or limb. In realising that danger, how nobly had Mr. Royce and his assistants risen to the occasion. He thought he was right in saying that between October 1, 1922, and May 31, 1923, the Rolls-Royce aero-engines, now fitted exclusively to the Handley Page aeroplanes on the London to Paris service, had flown for some 2,100 engine hours. As worked out by them, there had been one forced landing on average for every 24,000 miles flown, or once round the earth. The mileage achieved by the Rolls-Royce aero-engines in civil aviation had now reached the stupendous total of 1,225,000 air miles. That figure was compiled, from the actual record of engines up to May 31 last. Only last Saturday he flew to France and back under the power of their engines with clock-like regularity and precision, and on that occasion one of the greatest French aeroplane designers and manufacturers expressed to him his admiration and envy of the reliability of British engines.

He did not think he was over-stating the case if he said that the whole future of civil aviation depended on its safety, which again very largely depended on the reliability of the engines used. His Grace, after enumerating some of the great achievements of the Rolls-Royce aero-engine, concluded by saying there was no doubt that both military and civil aviation owed a great debt to the genius of Mr. Royce and those who worked with him. He felt they could leave it safely in his hands to go on developing these engines for the future on the lines that they believed to be necessary for the safety and extension of aerial transport and for the expansion of our military Air Force. He would like to take that opportunity of paying a tribute to British aeroplane engine constructors in general, and to say that he knew we could leave it to them to see that we maintained the proud position that we now occupied in aero-engine construction. He had much pleasure in then asking the Mayor, on behalf of this ancient borough of Derby, to accept the statue which Lady Birkenhead was then going to be kind enough to unveil.

The Countess of Birkenhead then formally unveiled the statue to enthusiastic cheers, and the Mayor of Derby signified his acceptance on behalf of the Borough.

Mr. J. H. Thomas, M.P. for Derby, followed with a short address in proposing a vote of thanks to the Duke of Sutherland, the Mayor and to the Countess of Birkenhead for their presence and assistance that day.

Lord Birkenhead, in seconding the resolution, said the firm was beyond all question the most distinguished firm carrying on a similar business in the world. It owed its reputation and its greatness to three men: to Mr. Rolls, no longer with them, driver and pioneer; to Mr. Royce, scientist and man of genius; and in the third place to Mr. Claude Johnson, still with them, matchless organiser and a man of business. You may have your scientist, very often little skilled in business; you may have your pioneer, very likely even less skilled, but unless and until the practical man came along and brought them together there may be no practical outcome, and it was the practical outcome of that rare comradeship that had brought this great prosperity to so large a section of the population of Derby, and which had brought so much security to these islands and this Empire.

The vote having been carried with acclamation, the Duke of Sutherland briefly replied, and the proceedings concluded with "God Save the King."

During the day's proceedings it was announced that the following communication had just been received from the

Director of Research of the Air Ministry in reference to the test of the Condor type III engine:—

"I have pleasure in stating that I have now received the report from the Aeronautical Inspection Directorate on the above. I am therefore directed to inform you that the Condor series III engine is now deemed to have passed the type test, and is consequently accepted as an airworthy engine."

The test consisted of 50 hours at nine-tenths of the rated horse-power at 1,900 revolutions per minute, the rated horse-power being 650. Then a high speed test was made for one

hour at full throttle at 2,100 revolutions per minute. The engine was then run for a further one hour at 2,100 revolutions per minute to obtain horse-power curves.

After the completion of these tests the engine was dismantled, and the parts were found to be in such good condition as to enable the Ministry to give the airworthiness certificate.

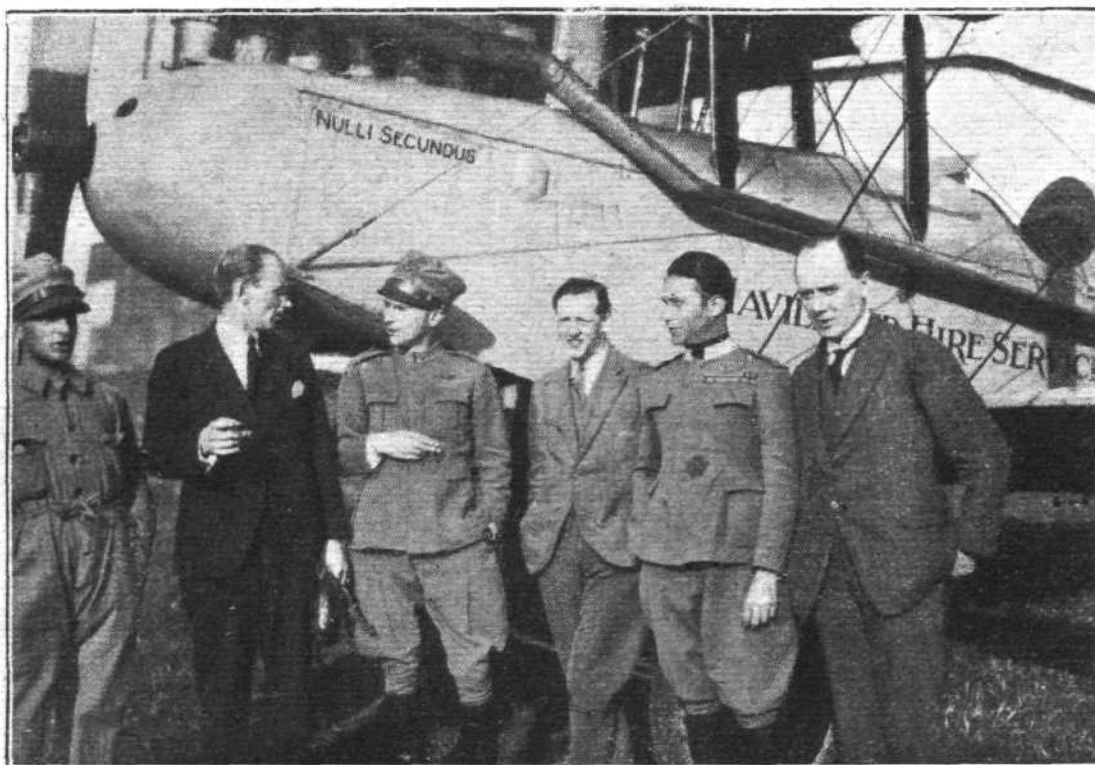
The Condor III is claimed to be the only engine of 650 h.p. or more that has passed this severe test and been officially certified by the Air Ministry as airworthy.

THIRTY-EIGHT HOURS' FLYING IN SIX DAYS

Fine Performance by D.H. Taxiplane

AMONG the unsubsidised flying undertakings which have been made to pay their way, the de Havilland Taxiplane Service occupies a prominent place. Without any form of Government assistance, except, of course, such ground organisation, wireless and meteorological services as are extended to anyone flying, this service is doing a great deal of good work, the value of which is not, perhaps, always appreciated as it deserves to be. We have referred to some of the great flights made by Mr. Cobham from time to time, and quite recently a flight was made by Capt. Broad which, although not regarded as

Paris and Lyons. On Thursday Naples was reached, with a single stop at Pisa. It should be remembered that from Marseilles along the coast there are practically no places where a machine could land, except in the surf. On Friday Capt. Broad left Naples and flew to Catania, the photographers getting their pictures of Etna on the way. Leaving Catania on Saturday a severe rainstorm was encountered over the Straits of Messin, and it was deemed wise to return to Catania. In the afternoon the weather cleared and the journey was resumed, the machine arriving at Naples on Saturday evening.



D.H. Taxiplane at Naples: This photograph was taken recently when Capt. Broad with his two passengers flew from Croydon to Sicily and back, doing 38 hours' flying in six days, in a machine which was barely finished.

anything out of the way by the pilot, is a striking proof of the reliability of the D.H. taxiplanes.

A machine was required at short notice to fly to Italy with photographers who wished to take photographs from the air of the recent eruptions. As all the older machines were away on other trips a new D.H. 9 which was just nearing completion was rushed through, and as soon as finished was taken for a flight around the aerodrome, landed, put on the compass base, filled up, and away it went.

Leaving Croydon on Wednesday, June 20, Marseilles was reached in the evening, stops having been made *en route* at

On Sunday, June 24, Lyons was reached, with landings at Pisa and Marseilles. There was some delay in getting away from Lyons on Monday morning, owing to the absence of any officials, but eventually the machine got away and reached Croydon on Monday evening. During the whole of the trip no trouble was experienced, the Siddeley "Puma" running smoothly and regularly the whole time.

During the six days' flying a total of 38 hours in the air was flown, and a distance of nearly 3,000 miles covered. Considering that the machine had only just been finished, this is a remarkable performance.

The R.A.F. Memorial Fund

THE Executive Committee of the above Fund are prepared to make certain grants towards the educational expenses of the sons or daughters of past or present Officers of the Royal Air Force who are in necessitous circumstances, preference being given to children whose fathers died during the War or from the effects of the War. The grants will be known as "The Salting Benefaction Grants," as the income from which they are derived has been generously provided by

Mrs. M. R. Salting, who, through the Air Council, placed two properties at Ascot at the disposal of the Fund with the above object in view. The total available annual income will ultimately be about £350, which will be allocated at the discretion of the Committee.

Applications, in the first instance, should be addressed to—

The Secretary, R.A.F. Memorial Fund,
7, Idlesleigh House, Caxton Street, London, S.W. 1.

THE ROYAL AIR FORCE

Memorandum

The permission granted to Sec. Lieut. J. W. Sampson to retain his rank is withdrawn on enlistment; June 5.

London Gazette, June 19, 1923

London Gazette, June 26, 1923

General Duties Branch

The following are granted short service commns. as Flying Officers, with effect from, and with seny. of, June 14:—R. R. Money (Flying Off., R.A.F. Reserve), W. G. Pudney.

The following Pilot Officers to be Flying Officers:—J. G. Shackleton; June 1. E. C. Barlow, C. A. Goatcher; June 28. The following Pilot Officers are confirmed in rank (May 13):—R. E. Bain, K. K. Brown, C. H. S. Buckmaster, C. W. A. Byrne, M. Fraser, A. E. St. G. Gratte, A. S. Hutton, E. V. H. Jarvis, H. P. Morris, G. H. Rawlinson, H. J. Storey, N. H. F. Unwin. The following Flying Officers are transferred to the Reserve, Class A:—V. C. Cordingley; June 1. G. P. F. Hills; June 16. The following is placed on the retired list (June 27):—Flying Offr. H. Bradford. The following Flying Officers resign their short service commns., and are permitted to retain rank of Lieut.:—E. A. W. Kent; June 14. I. E. McIntyre, A.F.C.; June 20.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Flight Lieutenants: C. R. Steel, D.F.C., to No. 10 Group Headquarters, Lee-on-Solent. 18.6.23. E. I. Bussell to Inland Area Communication Flight, Northolt. 18.6.23. J. L. Vachell, M.C., to R.A.F. Depot (Non-effective Pool). 26.5.23, on transfer to Home Estab. W. F. Anderson, D.S.O., D.F.C., to R.A.F. Depot (Non-effective Pool). 27.5.23, on transfer to Home Estab. R. E. Nicoll to Station Commandant, Iraq. 29.5.23. J. S. Holloway to No. 7 Sq., Bircham Newton. 1.6.23. C. R. Steele, D.F.C., to remain at R.A.F. Depot. Posting to No. 10 Group Headquarters, Lee-on-Solent, as previously notified is hereby cancelled.

Flying Officers: F. Carpenter to No. 12 Squadron, Northolt. 14.6.23. J. Noonan, D.S.M., to Boys' Wing, Cranwell. 15.6.23. R. R. Money and W. G. Pudney, both to R.A.F. Depot. 14.6.23, on appointment to Short Service Commissions. H. J. T. Russell to R.A.F. Depot. 4.6.23. R. C. Wansbrough to No. 1 School of Technical Training (Boys), Halton. 1.7.23. C. H. Brill to R.A.F. Base, Gosport. 22.6.23. C. Sutton to No. 70 Squadron, Iraq. 19.5.23.

Pilot Officers: R. H. Giles to No. 4 Flying Training School, Egypt. 14.5.23.

ROYAL AIR FORCE HALF-YEARLY PROMOTION LIST

Air Ministry, June 30, 1923

The undermentioned officers are promoted to the ranks stated, with effect from June 30, 1923. The promotion of certain other senior Air Force Officers will be announced later:—

General Duties Branch

Group Captains to be Air Commodores: John Glanville Hearson, C.B., D.S.O., Edgar Rainey Ludlow-Hewitt, C.M.G., D.S.O., M.C., A.D.C.

Wing Commanders to be Group Captains: Kennedy Gerard Brooke, C.M.G., Ivor Terence Courtney, C.B.E., Arthur Lowthian Godman, C.M.G., D.S.O., Malcolm Grahame Christie, C.M.G., D.S.O., M.C.

Squadron Leaders to be Wing Commanders: Alexander Shekleton, D.S.O., Richard Barrington Ward, A.F.C., Augustine Ap Ellis, Bernard Edward Smythies, D.F.C.

Flight Lieutenants to be Squadron Leaders: Edward Radclyffe Pretyma, A.F.C., Arthur Coningham, D.S.O., M.C., D.F.C., Reginald Addenbrooke-Prout, O.B.E., M.C., Eustace Osborne Grenfell, M.C., A.F.C., Denis Osmond Mulholland, A.F.C., Forster Herbert Martin Maynard, A.F.C., George Cyril Bailey, D.S.O., Cecil Hugh Hayward, James Everidge, M.C., Wilfrid Herbert Dolphin.

Flying and Observer Officers to be Flight Lieutenants:—Charles Drury Fuller, Edgar Henfrey Bryant, Alick Charles Stevens, William Mayes Fry, M.C., Brian Kyte David Robertson, A.F.C., Francis Henry Ernest Reeve, Francis John Williamson Mellersh, A.F.C., William Edward Theak, Hugh Val Pendavis, D.S.O., John Lloyd Melville de Cosigny Hughes-Chamberlain, Frank Beaumont, Frederick Lionel Benbow Hebbert, Leonard Maurice Elworthy, Nicholas Comper, Llewellyn Rolls Briggs, Walter Morgan Smith, Sydney Leo Gregory Pope, Ruthven Montgomerie Chase Macfarlane, M.C., Aubrey Robert Maxwell Rickards, A.F.C., Philip Leader Plant, Maxwell

ROYAL AIR FORCE MEMORIAL FUND

A MEETING of the Executive Committee was held on June 13, when the following were present:—

The Rt. Hon. Lord Hugh Cecil (Chairman), Lady Leighton, Dame Helen Gwynne-Vaughan, Mrs. Barrington-Kennett, Air Vice-Marshal J. F. A. Higgins, Air Vice-Marshal Sir Geoffrey Salmond, Air Vice-Marshal Sir A. V. Vyvyan, Group Captain E. R. Ludlow-Hewitt, Lieut. Commr. H. E. Perrin.

The amount of Grants sanctioned by the Committee since the previous Meeting, amounting to £379 13s. 3d., was approved, the number of cases dealt with by the Grants Sub-Committee being sixty.

A communication was read from the Rev. Basil Phillips, Vicar of St. Mark's Church, South Farnborough, Hants, on the subject of the unveiling in that Church of a Memorial Tablet, erected by the Fund in memory of those who fell in the Great War whilst serving with the Flying Services. The unveiling will be carried out by Air Chief-Marshal Sir Hugh Trenchard, Chief of Air Staff, at 3 p.m. on Friday, July 27.

The conditions under which certain educational grants will be made by the Committee for the sons or daughters of Officers, past and present, of the Royal Air Force, preference being given to children whose fathers fell during the War, or died as the result of the War, and which grants are the

Stores Branch

The following are granted permanent commns. in ranks stated for accountant duties. *Gazettes* of dates indicated in brackets, appointing these officers to short service commns., are cancelled:—

Flight Lieut.—E. W. Gregory, M.C.; April 11, 1921 (April 25, 1922).

Flying Officers.—P. Hay, M.C.; March 5, 1921 (March 15, 1921) (since promoted). E. W. Horncastle; April 11, 1921 (April 25, 1922).

Flight Lieut. R. H. Smyth, M.C., is transferred to Reserve, Class B. June 25.

Reserve of Air Force Officers

Class A

The following are granted commissions on probation in ranks stated in the General Duties Branch:—

Flying Officers.—H. Hemming, A.F.C.; June 4. C. G. Jenyns, C. D. Jenner, C. E. Jessel, R. D. Leigh-Pemberton, M.C., T. C. Lowe, M.C., R. V. Nalder, G. A. Ogg; June 26.

Pilot Officers.—H. E. Grove, D. W. S. Ireland, M. B. Lacey, R. N. Riddell, J. Simpson; June 26.

on appointment to a Short Service Commission for course of instruction. S. H. G. Trower and G. W. Dean, both to R.A.F. Base, Leuchars (No. 403 Flight). 22.6.23.

Stores and Accountants Branch

Flying Officers (Accountants): N. E. D. Hutchinson to No. 7 Sq., Bircham Newton. 20.6.23. J. R. Bond to No. 1 School of Technical Training (Boys) Halton. 30.5.23.

Flying Officer (Stores): A. H. Allan to No. 7 Sq., Bircham Newton. 1.6.23.

Medical Branch

Squadron Leader R. H. Knowles, M.D., D.P.H., to No. 1 School of Technical Training (Boys), Halton. 20.6.23.

Flying Officer J. B. Gregor, to R.A.F. Hospital, Cranwell. 29.6.23; to R.A.F. Depot. 23.7.23.

Flight Lieutenants (Medical): C. A. Harrison to No. 56 Sq., Hawkinge. 8.5.23. T. C. St. C. Morton, M.D., D.T.M., to Palestine General Hospital. 16.5.23. J. R. Crolius, M.B., to Military Detention Hospital, Jerusalem. 21.5.23. T. M. Walker to Palestine General Hospital. 16.5.23. J. A. Quin, M.D., B.A., to R.A.F. Depot. 25.6.23.

Flight Lieutenant (Q.Mst. Medical): H. Steele to Palestine General Hospital. 16.5.23.

Henry Coote, Kenneth Eric Ward, James Lawson, John Gustave Walser, M.C., Esmond Selby Ades, Robert St. Hill Clarke, A.F.C., James Francis Stallard, Charles Findlay, D.F.C., Ronan Linley Sweeny, Cecil George Wigglesworth, A.F.C., Thomas Audley Langford-Sainsbury, Walter Baldwin Eyer Powell, Stafford Berkeley Harris, A.F.C., John Stanley Chick, M.C., Ernest William Nicholson, Arthur Hyde Flower, Rowland John Divers, William Aver Duncan, Harry Bligh, James McBain, D.F.C., Arthur Cyril Bayley, Harold John Collins, Cecil Ferdinand Chinery, Charles Harold Potts, D.S.M., George Thomas Harvey Pack, Louis James Chandler, Walter Rumley Castings, M.B.E., George Irving Thomson, D.F.C., Strang Graham, M.C., Charles Roderick Carr, D.F.C.

Stores Branch

Squadron Leader to Wing Commander: Francis Augustus John Bartholomew Wiseman, O.B.E.

Flight Lieutenants to be Squadron Leaders: Basil Winstanley Michael Williams, Vere Julius Bethel Jacobs, Harold Gaul Etheridge.

Flying Officers to be Flight Lieutenants: Norman Robertson, Reginald Victor John Somerville Hogan, Daniel Barron.

Stores Branch Accountants

Flight Lieutenants to be Squadron Leaders: Percy Arthur Simmons, Ernest Walter Gregory, M.C.

Flying Officers to be Flight Lieutenants: William Rollinson, Harold John Gilbert, Charles William Rogers.

Medical Branch

Squadron Leader to be Wing Commander: Arthur Samuel Glynn, M.B.

Flight Lieutenants to be Squadron Leaders: Richard John Aherne, M.C., Peter Hutchinson Young, M.B., Percival Thomas Rutherford, O.B.E.

result of the generosity of Mrs. M. E. Salting, who, through the Air Council, placed two properties at Ascot at the disposal of the Fund, and which properties have now been sold, were settled, and shortly an advertisement will be inserted in the newspapers offering such assistance. The total available income from this benefaction will ultimately reach £350 per annum.

Air Vice-Marshal Sir Geoffrey Salmond, Chairman of the Sub-Committee dealing with Vanbrugh Castle School, obtained the consent of the Executive Committee to a proposal to increase the accommodation at the School for a further 13 boys at a cost of £1,000. He further obtained the consent of the Committee for an expenditure during the current year of the sum of £300 on necessary repairs required at Vanbrugh Castle.

It will be a great pleasure to the supporters of the Fund to know that this School, which now consists of 27 boys, is making splendid headway, and is serving a most useful purpose.

At the conclusion of the Executive Committee Meeting, the War Memorial Sub-Committee met and discussed details of the unveiling ceremony of the Memorial, which is to take place on the Victoria Embankment at 12 noon on Monday, July 16, by H.R.H. The Prince of Wales.

AIR NAVIGATION REGULATIONS: AMENDMENTS

A NEW Order in Council, making certain amendments to the Air Navigation Order of 1922, has just been published in the *London Gazette*. It directs that the following Articles shall be inserted after Article 9 of the 1922 Order:—

9A. Where it appears to any person authorised in writing by the Secretary of State for the purposes of this article that any aircraft is intended or likely to be flown in such circumstances that the flight would be in contravention of any of the provisions of sub-paragraphs (i), (ii) and (iii) of paragraph (1) of Article 3, or sub-paragraph (i) of paragraph (1) of Article 4, or Article 14 of this Order, or in such circumstances as to infringe any other provision of this Order and to be a cause of danger to persons in the aircraft or to persons or property on the ground, the person so authorised may give such directions and take such steps by way of detention of the aircraft or otherwise in relation thereto, as appear to him to be necessary in order to prevent the flight, and, without prejudice to any provisions of this Order with respect to the obstruction of authorised persons, any person acting in contravention of any directions given under this article shall be deemed to have acted in contravention of this Order.

9B. A person in an aircraft while flying in or over the British Islands shall not take or cause or permit to be taken any photograph of a prohibited area, or of any part thereof, or of any object therein, except with the special permission in writing of the Secretary of State, and subject to any conditions that may be attached to such permission.

9C. A person acting as, or carried in an aircraft for the purpose of acting as pilot, commander, navigator, engineer, or operative member of the crew thereof, shall not, while so acting or carried, be in a state of intoxication or in a state in which, by reason of his having taken or used any sedative narcotic or stimulant drug or preparation, his capacity so to act is impaired.

An amendment to Schedule II empowers the Secretary of State to detain for official inspection a passenger or goods aircraft which is about to proceed on a flight, if he has reason to believe, on complaint or otherwise, that it is in an unfit condition. A new paragraph in Schedule IV directs that if an aircraft about to land on or leave an aerodrome has to make a circuit, that circuit shall be left-handed (anti-clockwise).

3. The following Article shall be substituted for Article 13 of the principal Order:—

"13.—(1) Any person required under this Order to be provided with a licence shall on demand produce his licence, and, in the case of a pilot, his pilot's log book for the inspection of any person authorised for the purpose by the Secretary of State or of any police constable.

"(2) The owner, hirer and person in charge of any aircraft shall on demand produce or cause to be produced, for the inspection of any person authorised for the purpose by the Secretary of State or of any police constable, any certificates or licences relating to the aircraft, any of the prescribed log books, and, in the case of an aircraft engaged in international navigation if it carries passengers or freight, the prescribed list of names and the prescribed bills of lading and manifest respectively."

4. The following paragraph shall be inserted at the end of Article 15 of the principal Order:—

"(2) A person shall not wilfully or negligently injure or interfere with any aerial lighthouse established or maintained with the approval of the Secretary of State or any light exhibited from any such lighthouse."

5. In Article 22 of the principal Order the words "paragraph (1) of article 4" shall be substituted for the words "paragraph (2) of article 4."

6. In proviso (b) to paragraph (1) of Article 23 of the principal Order, for the words "articles 9" there shall be substituted the words "articles 9, 9A, 9B, 9C."

7. The following paragraph shall be inserted after paragraph (2) of Article 27 of the principal Order:—

"(2A) In this Order references to passengers carried for hire or reward include references to persons carried in aircraft for the purposes of instruction in flying for which payment is made."

8. The following paragraph shall be substituted for paragraph 4 of Schedule II of the principal Order:—

"4. If the Secretary of State has reason to believe, on complaint or otherwise, that a passenger or goods aircraft within the British Islands is intended or is about to proceed on any flight while in a condition unfit for flight, he may give such directions and take such steps, by way of provisional detention of the aircraft or otherwise in relation thereto, as may be necessary for the purpose of causing the aircraft to be inspected by authorised representatives of the Secretary of

State, and may, upon the result of such inspection, cause the aircraft to be detained until the execution of such alterations or repairs as he may consider necessary to render the aircraft fit for flight."

9. The following amendments shall be made in Schedule IV of the principal Order:—

(i) The following paragraph shall be substituted for paragraph 14:—

"14.—(a) An aircraft wishing to land at night on an aerodrome having a ground control shall, before landing, fire a green pyrotechnical light or flash a green lamp intermittently. In addition, it shall make by international Morse code the letter group forming its call-sign.

"(b) Permission to land will be given by the same call-sign from the ground, followed by a green pyrotechnical light, or flashing a green lamp intermittently."

(ii) In paragraph 15 the word "pyrotechnical" shall be substituted for the word "Very's."

(iii) The following paragraph shall be substituted for paragraph 16:—

"16. An aircraft compelled to land at night shall before landing fire a red pyrotechnical light or make a series of short and intermittent flashes with its navigation lights."

(iv) In paragraph 17 the word "pyrotechnical" shall be substituted for the word "Very's."

(v) In paragraph 19 the word "green" shall be substituted for the word "red."

(vi) The following paragraph shall be substituted for paragraph 36:—

"36. At every licensed aerodrome if an aircraft about to land or leave finds it necessary to make a circuit or partial circuit, such circuit or partial circuit shall, except in case of distress, be left-handed (anti-clockwise)."

(vii) In paragraph 46 the words "lights shall be placed on the aerodrome" shall be substituted for the words "the signals shall be," and the words "A red light shall indicate a left-hand circuit, and a green light shall indicate a right-hand circuit (see paragraph 36 of this Schedule)" shall be omitted.

10. In paragraph (1) of Schedule VII of the principal Order the following sub-paragraphs shall be omitted:—

"Orkney Islands.—An area enclosed by straight lines joining the following points:—Tor Ness, Rora Head, Inga Ness, Mull Head, Old Head."

"Osea Island.—Three statute miles in all directions from the centre of Osea Island."

11. This Order may be cited as the Air Navigation (Amendment) Order, 1923, and the principal Order and this Order may be cited together as the Air Navigation Orders, 1922 and 1923.

IN PARLIAMENT

Aerial Armaments

MR. MOREL on June 27 asked the Prime Minister if, before definitely committing the country to further heavy expenditure upon aerial war machines, and in order to prevent the development of international rivalry in air armaments, His Majesty's Government will consider the advisability of addressing an invitation to all the Powers to meet in conference for the purpose of arriving at an agreement for an international limitation of aerial war-craft construction?

MR. BRIDGEMAN: The League of Nations Commission for the Reduction of Armaments is now considering the whole question of the limitation of armaments, including aerial armaments, and my right hon. friend thinks we should await the result of their deliberations before taking other steps.

FLIGHT

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.

Telegraphic address: Truditur, Westcent, London.

Telephone: Gerrard 1828.

SUBSCRIPTION RATES

"FLIGHT" will be forwarded, post free, at the following rates:—

| UNITED KINGDOM | | | ABROAD* | | |
|------------------------|----|----|------------------------|----|----|
| | s. | d. | | s. | d. |
| 3 Months, Post Free... | 7 | 7 | 3 Months, Post Free... | 8 | 3 |
| 6 " " "... | 15 | 2 | 6 " " "... | 16 | 6 |
| 12 " " "... | 30 | 4 | 12 " " "... | 33 | 0 |

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates.

* European subscriptions must be remitted in British currency

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.